VOL. IV. NO. 153.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 28 1891

PRICE TEN CENTS.] Copyright, 1891, by THE GARDEN AND FOREST PUBLISHING COMPANY. [$4.00 A YEAR, IN ADVANCE.

To be published on the First of February next, an AMERICAN EDITION *of the*

LINDENIA,

The "Graphic of Orchids,"

Conducted by F. LINDEN, LUCIEN LINDEN, EM. RODIGAS, and R. A. ROLFE.

The Colored Plates by the celebrated artists, P. DE PANNEMAEKER, A. GOOSSENS *and* G. SEVEREYUS.

AN AMERICAN EDITION of the **LINDENIA** will be published regularly on *the first of each month*, and issued in half-yearly volumes, each of which will form an album of beautiful portraits, executed in natural colors, of *rare, new* or *popular species* or *hybrids of Orchids*. The plates are 14½ inches long by 11 inches broad, which will be found a most convenient size for use in the Orchid-house or drawing-room. Each monthly number will contain *four plates* with eight pages of text in English only, with Latin diagnosis. The descriptive and cultural notes of the Orchids figured will be given by MM. LINDEN, RODIGAS and R. A. ROLFE. The horticultural press of every country has pronounced the **LINDENIA** to be "*the highest class and cheapest illustrated publication relating to Orchids.*" The printing and colored plates are executed in the most finished style, representing the Orchids illustrated in the most perfect and natural state, both in pseudo-bulbs, leaves and flowers.

TERMS OF SUBSCRIPTION: Six Months (one half-yearly volume with 24 plates), $6, post-free, payable in advance.

Application should be made to the publisher, **M. LUCIEN LINDEN, 100 Rue Belliard, Brussels (Belgium).**

May also be had at all the principal Libraries. ☞ *A specimen number will be forwarded to any one applying to the above address.*

SHRUBBY SPIRÆAS,
Arizfolia, Thunbergi, Van Houttei, etc.

ROSES

CLEMATIS,

HYDRANGEAS, BERBERIS, ETC.,
Hardy Herbaceous Plants,
Spiræa Japonica grandiflora, New.
Send for Catalogue.
REA BROTHERS, Norwood, Mass.

STANDARD FLOWER POTS.
We defy all competition in quality of goods, prices and shipping advantages. Send for list.
SIPPLE, DOPFFEL & CO., Syracuse, N. Y.

FITZWATER PEAR COLORED PLATES and CIRCULARS FREE. Send Postal card.
FITZWATER PEAR CO., Lim'td, Himrods, N.Y.
Send 10 cents for Illuminated Calendar and 3 Colored Plates.

Readers of GARDEN AND FOREST are requested to mention that paper in corresponding with advertisers.

ERIE RAILWAY.
The Picturesque Route of America. Via Niagara Falls or Chautauqua Lake. An Enchanting Panorama of Mountains, Forests and Streams.
SOLID TRAINS between New York and Chicago. No change of cars. VESTIBULED LIMITED (strictly first-class), without extra charge for fast time and superior service.
W. C. RINEARSON, General Passenger Agent.

OLD FASHIONED GARDENS.

Designed and planted with *hardy* material.

JAMES H. BOWDITCH,
62 DEVONSHIRE STREET,
BOSTON, MASS.

THE THERMOSTATIC INCUBATOR. The most reliable machine made. Fully guaranteed. Used by leading Poultry raisers. *If you wish to know all about this really first-class Incubator send for circular, free.* Send for Warner's catalogue of Brooders and Hot Water Heaters. **JAS. E. WARNER, 19 Park Place, New York City.**

GLASS For GREENHOUSES, GRAPERIES, CONSERVATORIES, HOTHOUSES AND HOTBEDS.
VANHORNE, GRIFFEN & CO.
Importers of French Glass. Also American Window Glass.
Special Importation for Rose-house purposes.
131, 133, 135 & 137 FRANKLIN ST., NEW YORK CITY.

CHEAPEST
PLANTS, CUTTINGS and SEEDS
IN AMERICA. LIST FREE.
CHAS. W. BUTTERFIELD, Bellows Falls, Vt.

N.Y. Engraving and Printing Co.
PHOTO-PROCESSES.
ENGRAVED PLATES FOR ALL ILLUSTRATIVE PURPOSES.
320-322 Pearl Street,
NEW YORK.

WAUKEGAN NURSERIES

NEW AND RARE

HARDY + EVERGREENS.

Three of the most beautiful Evergreens in cultivation. The only large stock in the market. Colorado Blue Spruce, Picea pungens, three inches to four feet high; Douglas Spruce of Colorado, three inches to six feet high; Abies concolor, a limited stock of fine specimens, six to nine inches high. Also a large stock of two-year Seedlings, four to six inches high. The above are all perfectly hardy in New England and on the Western Prairies.

Also, the largest stock of Evergreens in America, three inches to six feet high; together with a full and fine stock of

FOREST TREE SEEDLINGS,

including Maple, Ash, Elm, Birch, European Alder, Wild Black Cherry, Catalpa speciosa, European Larch, Black Walnut, etc., etc.

Waukegan is on the C. & N. W. R'y, north of Chicago. We ship at Chicago rates.

ROBERT DOUGLAS & SONS,

Waukegan, Ill.

Catalogue Printing.—For every description of Catalogues and other artistic printing, communicate with THE KNICKERBOCKER PRESS, G. P. Putnam's Sons, New York, where many of the most attractive illustrated Catalogues of the day are made. It costs little, if any, more to print a well planned and handsome Catalogue which will be preserved by the recipient, than it does to issue one only fit for the waste basket.

Flower Pots.

We give special attention to private trade, and keep always on hand a large and selected stock of perfectly made Pots, as follows:

Hand-made, old pattern, from 4-inch to 24-inch inclusive.
Machine-made, from 2-inch to 4½-inch, old pattern, straight sides.
"Standards," from 1¾-inch to 12-inch inclusive.

Distance should not prevent private trade from using the best Pots that are manufactured, as freights are very low and breakage nominal. Correspondence solicited.

A. H. HEWS & CO.,

North Cambridge, Mass.

PRINTING For Poultry and Stock Fanciers, Beekeepers, Nurserymen, Florists, Dairymen, Fruit Growers, Farmers, etc., a specialty. We have a large line of electrotype cuts for illustrating your work. Samples free. Cuts for sale. Envelopes, letterheads, cards, and tags from 40 cts. per 100 and up. DeFuy's Electric Printing Works, Syracuse, N. Y.

The Gill Engraving Co.,

39 & 41 Park Place, New York.

PHOTO-ENGRAVING by all Modern Processes.

Cuts from Photographs, Pen and Ink and Crayon Drawings, Wood Cuts, Etc., by Zinc Etching, Photo-Electrotyping and Half-Tone.

HARDY PLANTS.

Descriptive Catalogue of 100 pages will be mailed to all applicants. Hollyhocks, Iris, Paeonies, etc., together with many NEW SORTS not before offered.

H. MEYERS,

Lock Drawer E,—Late Woolson & Co.—Passaic, N. J.

Six days earlier than any variety tested at the Agricult'l Ex. Grounds at Geneva, N. Y. Color greenish white: pulp tender, sweet and delicious. The only grape that ranks first both in earliness and quality. Each vine sealed with our registered trade-mark label. Send for circulars giving further information. Agents wanted Address STEPHEN HOYT'S SONS, New Canaan, Ct.

THE GREAT AMERICAN TEA COMPANY

CHANCE FOR ALL

To Enjoy a Cup of Perfect Tea. A TRIAL ORDER of 3½ pounds of Fine Tea, either Oolong, Japan, Imperial, Gunpowder, Young Hyson, Mixed, English Breakfast, or Sun Sun Chop, sent by mail on receipt of $2.00. Be particular and state what kind of Tea you want. Greatest inducement ever offered to get orders for our celebrated Teas, Coffees and Baking Powder. For full particulars address THE GREAT AMERICAN TEA CO. P. O. Box 289. 31 and 32 Vesey St., New York.

MUSHROOM SPAWN. Best Milltrack. Of unsurp'd quality.

—FRESHLY IMPORTED.—

Can be thoroughly relied on to produce a **fine crop of the best Mushrooms.** Our stocks are the largest and **freshest** in the country. Quality guaranteed the BEST IN THE WORLD. Why spend your money on doubtful quality, when you can get the **best** at a price that will please you? We sell **at rock-bottom prices for first quality spawn.**

By mail, post-paid, **22 cts.** per pound, Five pounds for **$1.00.** By express, Ten pounds for **$1.20,** Fifty pounds for **$5.** One pound of spawn will plant a space 3 feet by 4. **Special** prices for LARGER quantities.

John Gardiner & Co., 21 N. Thirteenth St., Philadelphia, Penna.

THE United States Mutual **ACCIDENT** Association

by its justice and liberality has won such a degree of popularity that it is to-day the largest organization furnishing Accident Insurance.

$100,000 Emergency Fund.

$5,000 Full Indemnity Preferred

Policy costs $15.00 per year.

320, 322 & 324 Broadway.

CHARLES B. PEET, President.

JAMES R. PITCHER, Sec'y and Gen'l Manager.

GOLD MEDAL, PARIS, 1878.

W. BAKER & CO.'S

Breakfast Cocoa

from which the excess of oil has been removed,

Is absolutely pure and it is soluble.

No Chemicals are used in its preparation. It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is therefore far more economical, *costing less than one cent a cup.* It is delicious, nourishing, strengthening, EASILY DIGESTED, and admirably adapted for invalids as well as for persons in health.

Sold by Grocers everywhere.

W. BAKER & CO., Dorchester, Mass.

BOOK HOLDERS.

THE MOST PERFECT DICTIONARY HOLDER. Folding and Adjustable Tables.

SEND FOR CATALOGUE.

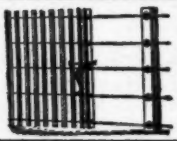
R. M. LAMBIE,
39 E. 19th St., N. Y.

Parsons & Sons Co. (Limited),

Flushing, N. Y.,

Offer Selected Specimens of Japanese Maples, Magnolia hypoleuca, Rhododendrons, Retinospora obtusa.

And many other Rare Trees and Shrubs.



THE GARRETT PICKET AND WIRE FENCE MACHINE

Weaves to the posts. A universal favorite. Thousands in use. Guaranteed. Freight paid. Agents are reporting big sales. Machines, Wire, etc., at wholesale direct from factory to Farmers. Catalogue free. Address the manufacturer, **S. H. GARRETT,** MANSFIELD, OHIO.

United States Nurseries,

SHORT HILLS, NEW JERSEY.

The acknowledged Headquarters for

CHRYSANTHEMUMS,
HARDY PERENNIALS,
STOVE & GREEN-HOUSE PLANTS,
ORCHIDS, CYPRIPEDIUMS,
SINGLE DAHLIAS, NOVELTIES.

Thousands of plants in stock of all leading varieties of the above specialties.

Plants clean, well grown and true to name.

Please visit our Nurseries, or write for Catalogues. *Respectfully,*

PITCHER & MANDA.

PEARS' SOAP
is the MOST ELEGANT
TOILET SOAP
IN THE WORLD.
Of all Druggists, but beware of imitations.

Garden and Forest.

Among the contents of next week's issue (No. 154) will be the following articles:

Some Notes on Dahlias.
By C. G. PRINGLE.

Juglans Vilmoriniana. (Illustrated.)
By M. L. DE VILMORIN.

Viola ocellata. (With figure.)

Some Diseases of Plants.
By A. W. PEARSON.

The paper will contain an illustration of Juglans Vilmoriniana from a photograph, and a figure of Viola ocellata from a drawing by Mr. C. E. Faxon.

GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JANUARY 28, 1891.

TABLE OF CONTENTS.

	PAGE.
EDITORIAL ARTICLES:—The "Sauce" of Architecture	37
A Vase of Chrysanthemums. (With figure.)	38
Muskau—A German Country Park. (With plan.)....*Charles Eliot.*	38
PLANT NOTES:—Lyonothamnus asplenifolius	39
NEW OR LITTLE KNOWN PLANTS:—New Orchids....*R. A. Rolfe.*	40
FOREIGN CORRESPONDENCE:—London Letter....*W. Watson.*	40
CULTURAL DEPARTMENT:—A Winter Campaign Against Insects, *Professor John B. Smith.*	42
The Cracking of Fruits and Vegetables....*Professor E. S. Goff.*	42
Lapagerias....*W. H. Taplin.*	44
Notes on Some Hardy Wild Roses.—IV....*J. G. Jack.*	44
Protecting Evergreen Plants....*Joseph Meehan.*	45
Iris Bakeriana....*M. Barker.*	45
CORRESPONDENCE:—Orchids at North Easton....*M. Barker.*	45
The Proposed Monument to General Grant....*A. W. C.*	46
The Gardens of Wellesley College....*H. G.*	46
Lilium Hansoni....*C. L. Allen.*	46
RECENT PUBLICATIONS	46
NOTES	47
ILLUSTRATIONS:—Map of the Park at Muskau, Lower Lausitz, Germany	41
A Vase of Chrysanthemums, Fig. 10	43

The "Sauce" of Architecture.

AN architect who has studied in Paris, and, unlike many of his American brethren whose opportunities have been as good, has learned to appreciate the interest and importance of landscape-gardening and its vital connection with architecture, said, not long ago: "Yes; all French architects feel as I do, and in the studios they call landscape-gardening 'la sauce de l'architecture.'"

Now, a Frenchman's idea of the importance of a sauce is very different from our own, and one must know Parisian dinners and Parisian cooks to appreciate the full import of the phrase. Nevertheless, taking it in its highest potency, we are inclined to utter a mild protest against it. A truer simile would suggest the difference between an article of food which is cooked or prepared in any way and one which is raw. In any case where landscape-architecture might help the sister art (which means in every case except that of a building on a closely covered city street) there is as much necessity for its service as for the service of fire upon meat. A building badly placed when it might be well placed and surrounded is worse than ungarnished, it is incomplete. Moreover, in most cases, the way in which it should be placed and surrounded is not an open question for the architect to decide as he will. It is a question decided largely in advance by unalterable facts and settled canons of taste, and these the landscape-gardener is better fitted than the architect to understand. Take the instance of a country house. If the domain is small there will hardly be more than one spot where it can be set and one way in which its entrances and chief rooms can be arranged for convenience and good effect, and success here is involved in the arrangement of the grounds, as well as in that of the building. The architect cannot safely design the house without studying its relation to neighboring streets and structures and to the character of its own site, and then call in the landscape-gardener to add a "sauce" that will make it attractive. If he does this the owner is apt to find his chief windows looking where they should not look, and his entrances placed where they will necessitate inconvenient approaches, and these in their turn spoiling the grounds by preventing the best arrangement of lawns and gardens. If the domain is larger the problem is only more complicated, and more likely, if improperly attacked, to result in error and loss.

Not long ago an architect who stands high in popular repute was asked to design a large country house in a picturesque situation a mile or two from a New England town. Being unfamiliar with the spot, yet feeling obliged to begin his work in winter, he took a flying trip from his office in another city, drove up to the house of a friend in a sleigh, and asked for guidance to his client's property. There, walking about for just a quarter of an hour, he decided upon the site, turning a deaf ear to his friend's remonstrance that the view was so noble it ought to be carefully considered, and that it could not be considered when the trees were leafless, and the little lakes, so immensely important in summer, were blotted into the solid ground by a universal sheet of snow. To-day the house stands where no one would think of placing it who meant to live in it and had the slightest feeling for the beauty of nature. No garnishing, though supplied by the greatest landscape-gardener who ever lived, could now change this ruined estate into a fine one. Only a few miles from this is another large country house which, apparently for the sake of having it well seen from the highway, has been placed on the summit of such a steep rise in the ground that the carriage approach has been carried to the highway by a grade so heavy and a turn so sharp that even skillful drivers run danger of disaster every time they traverse it.

Nor should these be thought extreme cases. They could be matched by a thousand others of every-day occurrence. At every step, in every part of the country, we see what might have been fine places spoiled by the placing of the house, and even fine houses robbed of their right effect, because their builders thought of nothing beyond the conspicuous placing of the structure. Not every picture shows to best advantage when hung in a bright light in the centre of a wide field of wall, though a picture is an independent work of art. This a building never is; yet we constantly see proof that an architect thinks his structure will look best when most boldly shown from a hill-top or some exposure where no plantations can screen it from the road. It is a fatal mistake to think of the house as something independent of its surroundings. Even when its aspect has been more wisely considered, questions of prospect have often been forgotten. Or else the view from the piazzas and windows has been borne in mind while the aspect of the house from a distance has been neglected. To consider both together means a wider range of view than most of our architects take, and to secure excellence in both (which often necessitates a compromise involving some sacrifice in both directions) a power of foresight is demanded and a degree of skill which only a study of the art of landscape-gardening can give.

In our country hardly any one but professed landscape-architects has studied this art at all, while in France some knowledge of it is regarded as essential to architects. Here, therefore, the architect will do well not to trust himself, but to ask for the help of his brother artist. And, of course, he must ask it in advance, and not when his own labors are ended. We should be glad if all American architects were convinced of even as much as is expressed by the careless studio phrase we have quoted—if all could feel about sauces as Frenchmen do and then really be convinced that landscape-gardening is the "sauce of architecture." But this would only be a half step in the right direction. Happier still will be the time when they will realize that a building and its surroundings are one and indissoluble, that they must be considered together from the very outset, and that the claims of the one should never be unduly pushed to the unfair detriment of the claims of the others. There may be cases when a mere "sauce" of ornamental planting after architectural completion will serve. But almost always the work to be

executed can be rightly executed only in some way determined in advance by causes which must be studied according to the canons of landscape-art as well as of architecture. Very often the only choice will be whether a building of this character is to be placed on a given spot; with that determined, the one right way of treating both house and site will be prescribed by conditions which the architect cannot ignore; or if he does, no subsequent dressing by a landscape-gardener can redeem or even mask the error. And when a choice is possible between different good methods of planning and treatment, still this choice must be preliminary to the architect's action and should not be made according to his lights alone.

A Vase of Chrysanthemums.

AS a contrast to the group of Chrysanthemums of a single sort which we published some weeks ago (vol. iii., p. 397), we now present on page 43 a picture of a vase in which five flowers, each of a different kind, have been placed. We do not consider the arrangement entirely fortunate, as the weak stems of the two on the right of the picture hardly harmonize with the sturdier bearing of the others. But it will at least serve as a hint of what may be accomplished by thus contrasting specimen flowers of different forms and colors. It is often said that the best way to arrange Chrysanthemums, and, indeed, most kinds of flowers, is in groups or masses of a single kind. Certainly this advice is good, because eminently safe. So long as excessive crowding is avoided a really unbeautiful effect can hardly be produced with flowers of one kind with their foliage; moreover, it is always easier to find an appropriate place and background for such a group than for one of varied colors, and our readers hardly need to be told again that the beauty of a vase of flowers depends as much upon its proper environment as does the beauty of a painting. Nevertheless, safety is not the only, nor always the highest, aim even in arranging flowers, and too close an adherence to the generally excellent practice of massing may deprive us of occasional effects whose beauty, depending upon harmonious contrasts, is especially striking and individual. Feeble painters, we may say in explanation, are apt to win success by using a simple scheme of color and attempting no vivid contrasts, and great painters constantly do the same; but occasionally a great painter will boldly put the most strongly contrasted tones together—even upon occasion scarlets and crimsons—and produce a more striking sort of beauty by the harmony he wins from them. And so with flowers we may well at times exercise our taste in trying to produce a harmonious group with strongly contrasting blossoms. In our picture, for instance, the uppermost flower is of the deep yellow variety called Kioto; the central one is G. F. Mooseman, whose color is a dull crimson within the florets and a light brown without; the one to the left is a pure white blossom of Mrs. Langtry; the upper one on the right is a pink Mrs. Fottler, and the one beneath it is a bright yellow named Gold. Those who can command a variety of Chrysanthemums will do well some day to repeat this arrangement with the same flowers or others of similar colors. It requires care to make a coloristic success of such a group; but if the result does not suit them they will at least have a starting-point for an interesting series of experiments which may result in some other varied arrangement of entire and surprising beauty.

Muskau—A German Country Park.

THE River Neisse flows with no great rapidity from its source in the highlands which divide Germany from Austria to its meeting with the Oder in the plains south-east of Berlin. Its total length is perhaps one hundred miles, or about that of our New England Merrimac or Housatonic. In the lower half of its course it traverses an exceedingly sandy region, out of which the river has carved a shallow and crooked valley. Occasionally a cheerful meadow lies along the stream, but the banks or hills which bound the valley, and all the uplands beyond, are covered with a dismal and monotonous forest of Pines. The region has few natural advantages and little natural beauty.

In 1785, in the moated house of the Count or Lord of a part of this forest-country, was born a boy who was destined to work a wonderful revolution in the scenery of his native valley, and by so doing to awaken throughout Germany an interest in designed landscape which is still active and growing. This boy, Ludwig Heinrich Hermann von Pückler, became a restless youth, who first attempted at Leipsic the study of law, then tried and abandoned the military life, and finally declined to enter even the civil service of his country, because, as he said, "my liberty is too dear to me."

At the age of twenty-one he set out on a round of travels which occupied four years. He saw Vienna, Munich, Switzerland, Venice, Rome, Naples, southern France, Paris and the lands between, for all his journeying was done either on foot or on horseback. In 1812 he was cordially received by Goethe in Weimar; and in the following year, under the Duke of Saxe-Weimar, he was military governor of a post in the Netherlands. When peace was established he made his first visit to England, where he saw the landscape works of Brown and Repton; and in 1815, his father having died, he at last turned homeward to his Standesherrschaft of Muskau, on the River Neisse.

There is every reason to believe that the idea of improving the surroundings of his home and village had been cherished by Pückler during all his wanderings. His letters show his intense interest in both natural and humanized scenery; and they make it evident that the sight of the great works then lately accomplished in England had only made him the more eager to begin the arduous task he had set himself.

This task was nothing less than the transformation of the almost ugly valley of the Neisse into a vale of beauty and delight; and the great distinction of his idea lay in the fact that he proposed to accomplish this transformation not by extending architectural works throughout the valley—not by constructing mighty terraces, mile-long avenues or great formal water-basins, such as he had seen in Italy, at Versailles and at Wilhelmshöhe—but by quietly inducing Nature to transform herself. He would not force upon his native landscape any foreign type of beauty; on the contrary, his aim was the transfiguration, the idealization of such beauty as was indigenous.

In the picture galleries of Europe he had seen the first-fruits of the young art of landscape-painting. In common with the painter he had found in the study of the beauty of nature a source of pure joy which the men of the renaissance had failed to discover. Somewhere and somehow he had learned the landscape painter's secret, that deepest interest and finest beauty spring from landscape-character—character strongly marked and never contradicted. In England he had seen this truth illustrated by actual living landscape, for Repton's parks were simply the idealization of characteristic English scenery.

Accordingly we find Pückler, on his return to Muskau, intent upon including in one great landscape-scheme his schloss, his village, his mill, his alum works and all the slopes and levels which enclose them—intent upon evolving from out the confused natural situation a composition in which all that was fundamentally characteristic of the scenery, the history and the industry of his estate should be harmoniously and beautifully united.

One circumstance greatly favored the happy accomplishment of his design—namely, the very fact that he had to do with a valley and not with a plain or plateau. The irregularly rising land skirting the river-levels supplied a frame for his picture; the considerable stream, flowing through the midst of the level, with here and there a sweep toward the enclosing hills, became the all-connecting and controlling element in his landscape. Well he knew that what artists call "breadth" and "unity of effect" was fully assured if only he abstained from inserting impertinent structures or other objects in the midst of this hill-bounded intervale.

On the other hand, his difficulties were many and great. To restore the unity of the river-level just mentioned he had to buy and remove a whole street of village houses which extended from the town square to the mill. To perfect the levels themselves required the removal of the wild growth from many acres and the cultivation and improvement of the soil. To carry the park lands completely around the village, so as to make the latter a part of the perfected scene, and to otherwise rectify the boundaries of his estate, required the purchase of some 2,000 morgen of land. Moreover, the hill-slopes behind the village, where the Count particularly wanted a background of rich verdure, were so barren they would hardly grow even Pines, so that these and many of the other upland slopes of the estate had to be improved at much cost and trouble.

In the valley the pre-existing but confused elements of breadth and peace and dignity were to be developed and enhanced. In the thickets of the lowlands and along the bases of the hills were found many large Oaks and Lindens which helped much to give character to the intervale. In the upland

regions the original tangle of knolls, dells and glades was to be made still more pleasantly intricate by opening the wood here and closing it there, and by breaking and fringing the original Pine-forest with a great variety of appropriate trees and shrubs. This work of introducing more cheerfulness and variety proceeded gradually with the happiest results. To-day the crooked ways which follow the hidden dells in the woods are as charming in their way as is the central valley of the Neisse, while the roads which lead along the edges of the heights and command views of the valley are the most delightful of all. It would be difficult to make choice between the view from the low-lying schloss over the quiet meadows to the semicircle of hills beyond the river and the reverse view from these hills looking across the stream and the intervale to where the turrets of the schloss and the long row of village roofs lie close together under the edge of the dark woods which crown the western range of heights. When his thirty years of pleasant toil were passed Pückler tells us he was one day showing his results to a very intelligent and discriminating lady of his acquaintance who told him "very modestly" that she had little knowledge of the art of designing parks, and that she could recall many scenes grander and more picturesque than the one now before her; "but here," she said, "what strikes one first and gives one most delight is the repose which pervades the whole scene"; and the Count adds that no praise ever pleased him more.

The plan, see page 41 (for the original draft of which I am indebted to Dr. Carl Bolle of Berlin), must serve to explain the general arrangement of the estate. Within the park are included not only the chateau and its gardens, pleasure-grounds and appurtenances of all sorts, but also the very ancient castle hill, the old schloss of the Count's more immediate predecessors, the close-built village of Muskau, with its churches, schools, shops, etc., many acres of plowed land owned and cultivated by the villagers with other acres farmed by the Count, a Pine-woods hotel and sanitarium, an arboretum and nursery, a woodland cottage called "the English house," used as a holiday resort by the townspeople, a large grist-mill, an alum mine, the ruin of the oldest church in Lausitz, and more than one ancient grave-yard. In most directions the park has no definite boundary. It flows into the ordinary Pine-forest on many sides, and in several directions the country roads are "parked" for many miles.

Always keeping in mind his general scheme, Pückler was occupied during thirty years in extending his works and developing the details. At the end of that time he suddenly sold his creation! Muskau passed to Prince Frederick of the Netherlands. He who had become Prince Pückler-Muskau was obliged, like many a landscape painter, to confess himself a victim of his love of beauty. In his zeal for his art he had outrun his resources. At the age of sixty he retired to his lesser manor of Branitz, where he wrote his invaluable books and passed a peaceful old age, varied by many journeys and many visits to the country-seats of friends. He died in 1873.

All Germany has long held him in high honor. In England, the "Letters of a German Prince," as the translation of his "Briefe eines Verstorbenen" was entitled, passed through several editions, and remains to this day the best foreign delineation of the England of his early manhood. His essays on landscape were long since translated into French, and it is to be hoped that they may yet appear in English, for they contain a very clear presentation of the elements of landscape design, as well as many lively descriptions of his work at Muskau.

The significance, for us Americans, of this work at Muskau is very obvious. To be sure at least one-third of our great country is so arid that luxuriant vegetation must depend on irrigation; and, where this is the case, a pleasure-ground becomes an oasis to be sharply marked off from, and contrasted with, the surrounding waste. Spanish models will help us here. But the other half of our continent presents verdurous scenery of many differing types, from the rocky Pine-woods of Quebec to the Palmetto-thickets of Florida. Throughout this varied region there is a woeful tendency to reduce to one conventional form all such too meagre portions of the original landscape as are preserved in private country-seats and public parks. What shall check this tiresome repetition of one landscape theme? When shall a rich man or a club of citizens, an enlightened town or a pleasure resort, do for some quiet lake-shore of New England, some long valley of the Alleghanies, some forest-bordered prairie of Louisiana, what Pückler did for his valley of the Neisse? He preserved everything that was distinctive. He destroyed neither his farm nor his mill nor his alum works; for he understood that these industries, together with all the human history of the valley, contributed to the general effect a characteristic element only second in importance to the quality of the natural scene itself.

Our countrymen are beginning to manifest an appreciation of landscape-painting; let them show the genuineness of their appreciation by preserving and enhancing the beauty of the actual landscape in which their lives are passed.

Boston. *Charles Eliot.*

Plant Notes.

Lyonothamnus asplenifolius.

THE following note is extracted from an interesting account of this tree contributed by Professor Henry Chapman Ford to the *Bulletin of the Santa Barbara Society of Natural History:*

"In the summer of 1885 Mr. Barclay Hazard, of Santa Barbara, during a visit to the island of Santa Cruz, noted a new and peculiar shrub or small tree, and called the attention of the fact to Professor E. L. Greene, of the California University. During July of the following season (1886) Professor Greene visited the island and found Mr. Hazard's discovery to be a new species of Lyonothamnus, and later, in the *Bulletin of the California Academy of Sciences*, described it under the name of *Lyonothamnus asplenifolius*.

"In 1888 Mr. Brandegee found the same species on the island of Santa Rosa, but he states that 'the trees were small and often distorted by the wind.'

"Professor Greene found it growing in a hundred fine groves distributed up and down the thirty miles of the northern slopes of Santa Cruz. He speaks of specimens often as high as thirty-five or forty feet, and says: 'No other small tree of our coast equals this in grace of form and beauty of foliage. The flowers, too, are quite showy in their season, the larger corymbs often measuring a foot in diameter,' adding that 'the wood, close-grained and hard, was called iron wood by the men of the island.'

"As early as 1875 the writer was informed of the existence of this 'iron-wood' and vainly endeavored to procure specimens at the hands of sailors and others frequenting the island.

"It was not until this season (1889) that opportunity offered a personal inspection of the growing trees. In a recent visit to Lady Harbor Dr. Yates and myself climbed the precipitous slopes near, and upon the rocky ridges we found large groups of Lyonothamnus, obtaining specimens of the wood, bark, leaves and corymbs of seed capsules, which were shown at a late meeting of the Society. The trees were in clumps of from five to fifteen individuals, and of different diameters, ranging from a half inch to six or eight inches. The outer bark is deciduous, parting in tough strings from the trunks of the larger specimens, leaving the inner portion rich in reddish brown color. The beautiful Fern-like foliage seems to be deciduous, yet the tree may not be entirely bereft of leaves at any time. The flowering season having passed, deprived us of judging of their beauty. The trunks are quite straight, the branches springing from them somewhat in whorls at regular intervals. We noticed no seedling specimens, yet it is probable that other localities might furnish them.

"Examples of the wood of various diameters were obtained. It is exceedingly close-grained, hard, and of similar specific gravity to many tropical species. Specimens are in the process of seasoning with a probability that the wood will prove susceptible of taking a high polish with fine color. Notwithstanding its great weight proportionate to the size, it is said to be quite brittle when green. When seasoned it has long been a favorite wood for handspikes used by the sailors and others who have knowledge of its strength.

"The *Lyonothamnus asplenifolius* adds another singularly beautiful tree to our already long and desirable list that should be introduced in ornamental planting. Its showy flowers, rare foliage and general novelty should make it a favorite wherever planted. Its propagation by seeds ought not to be difficult, as they are produced in profusion.

"It belongs to the order *Saxifragaceæ*, and is the first tree of the family that has yet been discovered in North America, most representatives of the order being herbs or shrubs."

In a personal letter from Professor Ford he adds: "I am satisfied that the close-grained wood of this tree may become a rival of Turkey Box-wood for fine wood engraving. It possesses certainly the advantage over that wood of being obtainable in much larger blocks. Beautiful paper knives, with finely carved handles, have been wrought from it; but I have no doubt that it would serve for the manufacture of tool-handles and for various articles in turnery, as it can be made to take a high polish."

New or Little Known Plants.

New Orchids.

Lælia anceps, var. Thomsoniana, O'Brien.—Described as an exceptionally large and brightly colored variety, near the variety *Amesiana*. The segments are delicate blush-rose, and the lip very darkly colored. It appeared in the collection of W. J. Thomson, Esq., of St. Helens, Lancashire.—*Gardeners' Chronicle*, December 20th, p. 716.

Cypripedium × Leeanum, var. giganteum, Rolfe, is an exceptionally large form, raised by Messrs. Heath & Son, of Cheltenham, from *C. Spicerianum* fertilized with the pollen of a large form of *C. insigne*. The dorsal sepal is over two and three-quarters inches in diameter, and the petals two and seven-eighths inches long, and barely under an inch across near the apex.—*Gardeners' Chronicle*, December 20th, p. 718.

Cymbidium Tracyanum, Hort., is a large and showy Cymbidium which I believe to be a variety of *C. grandiflorum*, Griff. (*C. Hookerianum*, Rchb. f.), with the sepals and petals striped like a dark-colored *C. giganteum*. It agrees in other respects. The flowers are five and a half inches in diameter. It was exhibited by Mr. H. A. Tracy, of Twickenham, at a meeting of the Royal Horticultural Society on December 9th last, when it was awarded a first-class certificate. A few days later the plant was sold for seventy-five guineas to Messrs. F. Sander & Co., of St. Albans.—*Gardeners' Chronicle*, December 20th, p. 718; also December 15th, p. 702.

Masdevallia Schroederiana, Hort.—This pretty little Masdevallia, described on an earlier page of these notes, is figured in the *Journal of Horticulture*, for December 25th, p. 557, Fig. 74.

Rodriguezia Fuerstenbergii, Kränzlin, is a lovely species allied to *R. Leeana*, Rchb. f., with pale rose sepals and snow-white petals and lip, the latter with a golden yellow blotch and eight lines of the same color on the disc. The flowers are two inches long. It appeared in the collection of Count Fuerstenberg, of Donaueschingen, from an importation made by Messrs. F. Sander & Co., of St. Albans.—*Gardeners' Chronicle*, December 27th, p. 746.

Cypripedium × Eyermanianum, Rolfe, is a distinct and pretty hybrid raised in the establishment of Messrs. F. Sander & Co., of St. Albans, between *C. barbatum grandiflorum* and *C. Spicerianum*, the latter believed to be the pollen parent. As in many other cases, it presents a curious combination of the characters of the two parent species. It received an award of merit from the Royal Horticultural Society on November 11th last.—*Gardeners' Chronicle*, December 27th, p. 746.

Cypripedium × Deboisianum, Ch. de B.—A hybrid raised by Messrs. Edm. Vervaet & Co., of Mont St. Amand, by crossing *C. venustum* with the pollen of *C. Boxallii atratum*. It received a certificate of merit from the Société Royale d'Horticulture de Gand, and from the Chambre Syndicale des Horticulteurs Belges.—*Gardeners' Chronicle*, December 27th, p. 747.

Kew. *R. A. Rolfe.*

Foreign Correspondence.

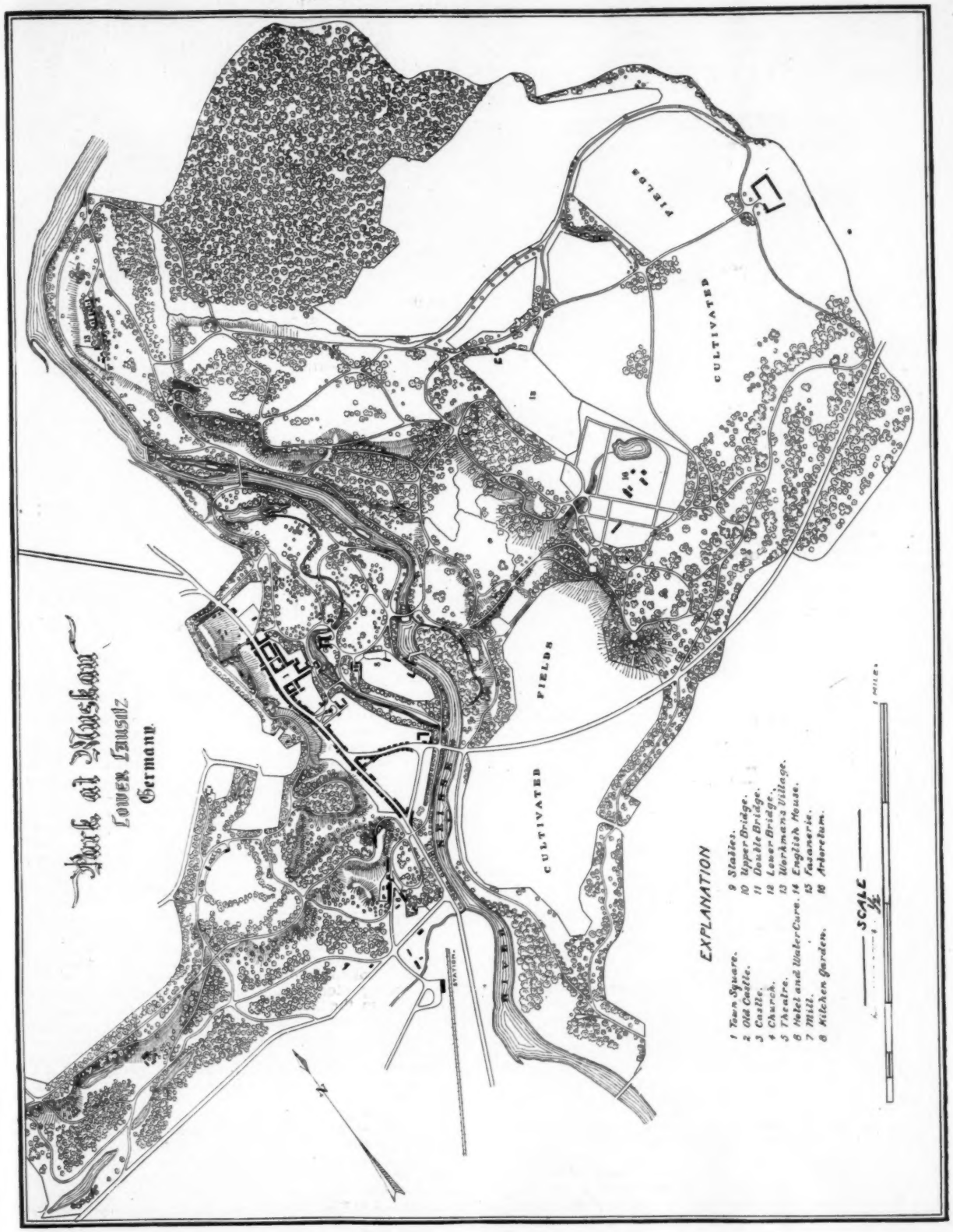
London Letter.

Low Temperatures for Tropical Plants.—The minimum temperature that a plant will endure with impunity cannot apparently be arrived at without actual experiment. The temperature of its wild habitat affords little or no assistance upon this point. It frequently happens that one of two plants from a given locality will bear exposure to severe frosts, while the other cannot endure even a degree or two. Instances of this nature are common among the plants from New Zealand, the Cape and Japan. We sometimes laugh at the apparent absurdities committed by our grandfathers in growing the Chusan Palm, *Aucuba Japonica*, *Sophora Japonica*, *Ginkgo biloba*, *Areca sapida* and many more in greenhouses, or even stoves, from a belief that they required such treatment. But in all these cases it has been only after experiments extending over a long period, or by accident, that the "hardiness" of these plants in England has been discovered.

The cold weather of the past month here, coupled with dense fog at times so black as to almost produce darkness, has necessitated exceptional treatment for many in-door plants. It is an established axiom in horticulture that the intenser the light, the higher the temperature may be, within reasonable limits, with advantage, and of course the converse of this is equally sound. When, therefore, the day is almost as dark as the night, we make it the rule to keep the temperature of the houses the same for the day as for the night. Consequently, the temperature in the large Palm-house at Kew has during the past cold, dark weather been kept regularly at about fifty-five degrees, and on several occasions it has even fallen to fifty degrees, while scarcely once has it risen to sixty degrees. In very severe frosts, especially if accompanied by cold wind, more harm is done by the hard firing necessary to keep a temperature of, say, sixty degrees, than by the five degrees lower temperature. It has been proved at Kew that stove plants generally in winter are happiest when kept in a minimum temperature of from fifty-five to sixty degrees, with a fairly dry atmosphere. The plants in the Palm-house include such intensely tropical subjects as the Durian, Cocoanut, most of the Palms from Mauritius and the Seychelles, Pandani of many kinds, in fact, representatives of nearly all of the most tropical forms of vegetation. The minimum temperature that such plants are called upon to endure when in a wild state is, according to Humboldt, seventy degrees. Yet, in glass houses in England it has been proved that they will bear a temperature as much as twenty degrees below this without apparently suffering in the least. It is possible that many of them would bear even more than this. We have proof of the hardier nature, hitherto unrevealed to horticulturists, of some of the tropical genera of Palms, such as Caryota, Oreodoxa, Seaforthia, Cocos and Chamædorea, which have endured in the large temperate house at Kew a temperature of from forty to fifty degrees for about three weeks.

Landscape-gardening.—Mr. William Morris, poet and socialist, has contributed to the *New Review* for January a paper on "The Socialists' Ideal in Art," in which he points out the relations of art to society. Art, he says, "is kept alive by a small group of artists working in a spirit quite antagonistic to the time; and they also suffer from the lack of co-operation, which is an essential lack in the art of our epoch. . . . Nor have they any position or power of helping the public in general matters of taste. For example, in laying out all the parks and pleasure-grounds which have lately been acquired for the public, as far as I know, no artist has been consulted, whereas they ought to have been laid out by a committee of artists; and I will venture to say that even a badly chosen committee (and it might easily be well chosen) would have saved the public from most of the disasters which have resulted from handing them over to the tender mercies of the landscape-gardener." Mr. Morris goes on to declare that "art as it is cannot build a decent house, or ornament a book, or lay out a garden, or prevent the ladies of our time from dressing in a way that caricatures the body and degrades it." Evidently Mr. Morris holds the belief that whatever is, is wrong, except, perhaps, socialistic views. Art in the garden is like art in most things, and what is perfection in one man's eyes is sometimes abominable in another's. There are, of course, many gardens which are so badly constructed as to offend even the common eye, but it is as ridiculous to blame the landscape-gardener for these as it would be to blame painters for all the bad pictures and poets for all the trash called poetry that one meets with everywhere. A landscape-gardener should be an artist, or he has no just claim to his title; his training must be at least as strict and his taste as good as that which makes a landscape-painter. It seems to me, therefore, as absurd to set painters to make good gardens as to expect landscape-gardeners to make good pictures with oil and canvas. There is surely a great deal more in the making of a garden than the disposition of walks and beds and lawns. A knowledge of the material to be used in its composition must be of first importance, and a man who is not a gardener cannot be expected to possess this. Probably the opinion of a committee of artists on the plan of a garden or on the garden when made might be of some value to the landscape-gardener, but the latter, if possessed of the true principles of garden architecture, would, I fancy, produce a much finer garden than any committee of artists, however well selected, that did not include a landscape-gardener among them.

Tritonia and Freesia.—In an interesting article on Tritonias, by Mr. W. E. Endicott (p. 600), a statement occurs at the end which, if correct, is of considerable biological interest. It is this: "Some years ago I hybridized the white form of *Freesia refracta* and *Tritonia crocata*. Singularly enough the resulting plants bore flowers which were Freesia pure and simple, though the Tritonia was the seed parent." Mr. Endicott's contributions to your paper are so careful and accurate that I hesitate to express any doubt of the trustworthiness of the statement here quoted. Freesia and Tritonia are so different that I cannot understand how what Mr. Endicott records could have occurred. The Tritonia has large, orange-colored flowers with broad refracted segments, and they are produced on tall


Park at Muskau
Lower Lausitz
Germany
CULTIVATED
FIELDS
CULTIVATED
FIELDS
RIVER
RIVER
STATION
EXPLANATION
1 Town Square.
2 Old Castle.
3 Castle.
4 Church.
5 Theatre.
6 Hotel and Water-Cure.
7 Mill.
8 Kitchen Garden.
9 Stables.
10 Upper Bridge.
11 Castle Bridge.
12 Lower Bridge.
13 Workmans Village.
14 English House.
15 Fasanerie.
16 Arboretum.
SCALE
1 MILE.

branching scapes; whereas in Freesia the flowers are tubular, curved at the base, the segments as broad as long, and, in the variety mentioned by Mr. Endicott, pure white save only a small blotch of yellow in the throat. Moreover, the scapes are much weaker than in *Tritonia crocata*. A cross between these two plants would be most interesting. Has Mr. Endicott any plants of the hybrid he raised?

London. *W. Watson.*

Cultural Department.

A Winter Campaign Against Insects.

THERE is time for a good many odd jobs during the winter in the garden and orchard, or even in the grove, where that is supposed to be kept in order, and no such odds and ends of time can be better employed than in a systematic campain against insects. In orchards usually infested by the tent caterpillar, especially if the trees are young or small, every twig should be examined against the sky for egg-masses. These encircle the twig, making an apparent swelling from half an inch to an inch in length, and are brown, smooth and glistening as if varnished. They look as though a disc of cobbler's wax had been flattened out to about the size of a half dollar and an eighth of an inch thick and then stuck round a twig of suitable size. These egg-masses when once recognized are very easily seen, and should be gathered and destroyed. The little caterpillars hatch in the spring and begin the formation of their tent, usually on the twig that bore the egg-mass. Gathering the eggs will of course prevent the formation of nests, and this is easier than to destroy the nest when once formed.

All dead wood should be removed, and trees that are badly infested by borers should be cut down and the wood burnt. If it is left, even in the wood-shed, the borers will still come to maturity, emerge at the proper time, and nothing has been gained. The Oak-pruner (*Elaphidion villosum*) sometimes infests Apple-orchards to a considerable extent. The usual habit of the larva is to bore in the branches, and at the approach of winter to girdle these inwardly to such an extent that a good high wind will break them and they fall to the ground, the larva remaining in the fallen wood and there completing its transformations. By gathering and burning all fallen twigs and branches, of course all contained insects are destroyed. Where there are Oaks on the grounds or in a grove the fallen branches should be also carefully gathered, not only for the benefit of the orchard, but for that of the Oaks themselves. Dead wood of all kinds should be destroyed. Many bark-borers and wood-borers get into young Oak and Hickory where a fire has been over the ground, and all such material should be cut and burnt. Loose bark on old trees should be removed, and the trunks thoroughly brushed with a stiff broom, which will clear the crevices of many cocoons and pupæ of the codling moth and other pests. A clean, smooth, healthy bark offers little or no chance for concealment, and other locations on rubbish, old fences, anything, in fact, on which shelter is obtainable, are selected by the insects, and these should be either removed or cleaned. A good coat of whitewash, thoroughly put on, will destroy much of the insect life hibernating on fences. It should be put on between board and post where the joints are loose, or between the rails on a fence of that description. Sheds in which produce is stored should be treated in the same way, that is, they should be thoroughly cleaned and whitewashed, and so also should cellars. A liberal use of whitewash is to be recommended not only for the insecticide effects which it may have, but because it offers a very poor resting-place for many Fungus-spores which are the cause of much of the rot and decay in fruit or produce-sheds.

Where ornamental, especially dwarf, Willows are grown, on lawns or gardens near New York, Jersey City and Newark, they should be carefully examined. There has been introduced within a few years last past a weevil, *Cryptorhynchus lapathi*, which works in Willow-twigs and branches much in the same way that the White Pine-weevil works in the leaders of so many of our ornamental conifers. The Newark collectors tell me that in some localities every Willow-copse is infested, and Mr. Machesney informs me that a Kilmarnock Willow in the grounds of a friend has been totally ruined by this beetle. It works preferably in the smaller twigs and branches, burrowing in considerable numbers, in much the same way as does the *Pissodes strobi*, and making much the same sort of cells when the larva is full grown. Wherever the presence of this insect is noted treatment should be radical, and every infested branch or twig should be burnt. The insect will undoubtedly spread and should be carefully watched. Badly infested trees, where they are small, had better be cut and burnt; larger trees should be cut back into sound wood as early as it can be safely done.

Arbor-vitæ hedges are especially subject to bag-worm attacks, and these should all be picked off and destroyed during the winter. The bags contain the egg-sack, and every sound bag means 200 or 300 larvæ early the next spring. Not only Arbor-vitæ, but other hedges and a large number of other plants and trees, are attacked. Willows are sometimes almost defoliated, and Poplars are favorites. As the larvæ do not usually wander from the tree on which they hatch, clearing a hedge or tree during the winter means practical exemption from attack in summer.

The caterpillar of the White Marked Tussack Moth (*Orgyia leucostigma*) is a great pest, especially in city gardens and streets. It is recognizable by the bright red head, shining like sealing-wax, and by the thick hair tufts on the back. These caterpillars pupate in a thin cocoon on the tree trunk, on fences, under the sills of windows, on the sides of weather-boarded houses, and, in fact, everywhere that a projection offers even a suggestion of shelter or a hold for the cocoon. The female moths are wingless, and on emerging cling to the outside of the cocoon, upon which they deposit their eggs, covering them with a pure white frothy mass, which hardens and becomes brittle, preserving the eggs from damage during the winter. These egg-masses are easily seen, and should be gathered and destroyed. In Albany, a few years ago, Mr. W. W. Hill induced some of his neighbors to unite with him in gathering the egg-masses on their premises and on the trees in front of their houses; and their trees were the only ones on the avenue that escaped defoliation. Trees that are badly infested with scale insects can be sprayed with the kerosene emulsion during the winter, and most or all of the scales destroyed. There is no foliage to interfere, and every twig and branch can be reached. The emulsion, too, can be used much stronger than is possible at other seasons of the year; the scales are more certainly penetrated and the vitality of insect or egg destroyed. One part of the emulsion to nine parts of water is both effective and safe.

It is in parks and gardens that these winter campaigns can be most successfully carried on. Cleanliness everywhere is of vital importance. Health is as essential to plants as to man to enable them to resist the attacks of insects and of Fungi. Therefore stimulate weaklings where possible, and where they do not respond destroy them. They offer a favorable soil for Fungus attack and a direct invitation to insects. Where these are once established on failing plants the healthy are in constant danger.

Rutgers College. *John B. Smith.*

The Cracking of Fruits and Vegetables.

THE cracking or bursting of fruits and vegetables during growth or at maturity is often a source of considerable loss. A better understanding of the causes of this trouble might enable us in some cases to use preventive measures. At present it must be confessed that the subject has been too little investigated. It is plain that all instances of cracking cannot be referred to a single cause, and it is quite possible that in some cases the real source of the affection has not been suspected.

In certain vegetables, as the carrot and kohl-rabi, as well as in the potato-tuber, the cracking appears to be the result of a second growth that occurs after some maturing of the tissues has taken place. When a period of dry weather, which tends to premature ripening, is followed by abundant rain, a new season of growth often begins. But the outer layers of cells being no longer capable of growth, the formation of new cells in the cambium region of the vegetable or tuber necessitates a rupture of the outer part, precisely as the formation of a new layer of wood causes ruptures in the bark of trees. The only preventive we can at present propose is the harvesting of the crop before the second growth has gone sufficiently far to cause the rupture.

The cracking of ripe apples upon the tree in wet weather appears to be due in some cases, at least, to the absorption of water through the skin. Ripe apples immersed in water will often absorb enough of the liquid to burst the skin in a few hours. This process has been ascribed to an osmotic action between the juices of the fruit and the water. In an experiment, however, there was no evidence that osmosis had taken place. After soaking an apple in distilled water for several days, during which the flesh cracked nearly to the centre, the water gave no evidence of containing glucose, and showed

only the faintish acid reaction. The preventive in this case is to gather the fruit as fast as it matures.

The cracking of apples and pears during growth is generally due to the Fungus parasite (Fusicladium) that causes the scab upon these fruits. It is, indeed, the advanced stage of this disease. The preventive is to spray the trees early in the season and at intervals thereafter with a solution composed of one and an eighth ounces of copper carbonate dissolved in one quart of aqua ammonia and diluted with twenty-five gallons of water.

The cracking of ripe tomatoes in wet weather is probably due, as in the case of ripe apples, to the absorption of water through the skin. But tomatoes sometimes crack in dry weather and while still immature, which must be ascribed to another cause. Sometimes this appears to result from an unequal ripening of the fruit. In this case a circle of cracks forms about the stem, and the portion of the skin within this circle often remains green after that of the remainder has assumed the color of maturity. The growth of the ripening part proceeding faster than that of the remainder, a rupture takes place between the two portions.

The cracking of melons often seems due to a similar cause. The blossom end of the fruit ripens faster than the stem end, and the expansion of this part causes a bursting of the apex. This difficulty appears to be characteristic of certain varieties.

Fig. 10.—A Vase of Chrysanthemums.—See page 38.

In a large number of seedlings of crossed parentage grown the past season some of the fruits burst from the blossom end almost to the stem, and in some cases the parts curved backward as if the fruit were being turned inside out.

The tendency to cracking of the fruit is apparently due in some cases to a pathologic condition of the plant. In an experiment in breeding the Tomato, a strain of the Cook's Favorite variety grown several generations from unripe seed formed the past season seventy-four per cent. of cracked fruits

while the same variety grown in the meantime from perfectly ripened seed formed only 25.3 per cent. of cracked fruits. Both strains were grown under equal conditions except in the selection of the seed. In nearly all cases certain varieties are more subject to cracking than others. A difference in the elasticity or permeability of the epidermis, a difference in the absorptive power of the flesh for water, or of the liability to fungous attack, or of the tendency to ripen unequally, causes certain varieties to resist much better than others the influences that tend to cracking.

University of Wisconsin, Madison. *E. S. Goff.*

Lapagerias.

THE several varieties of *Lapageria rosea* now in cultivation may be counted among the most beautiful of greenhouse climbers, and deserving of the widest recognition. And not only in the greenhouse does their naturally graceful habit appear to advantage, but also in cut flower arrangements they deserve a prominent place, for the flowers are not only of good size but also of great substance and lasting qualities. The original species, *Lapageria rosea*, was of Chilian origin, and was first introduced to commerce by Messrs. Veitch, of London, they having received it with several other noteworthy plants about the year 1847 from that indefatigable collector, William Lobb.

Lapageria rosea may be described as an evergreen twining plant, with dark green, cordate leaves, and pendulous, bell-shaped flowers, the latter being produced from the axils of the leaves along the upper portion of the shoots, and in the type are of a dark rose color, the inner surface of the petals being more or less mottled with a deeper color. Among the variations from the type that known as *L. rosea superba* is a very good one, and is of somewhat stronger growth than the original, and also has brighter flowers. Still another is that known as the Nash Court variety, so called in honor of the establishment in which it originated, and is somewhat similar to the preceding, but claimed to be far superior in point of color and also in floriferousness.

But perhaps the most notable of all the varieties is the white one, *L. rosea alba*, the flowers of which are fully as large as the type, but are pure white in color. This does not appear to grow as rapidly or as strongly as some of the other varieties, at least when young, though after the plant becomes well established there is but little difference. As before stated, the Lapagerias are greenhouse (or cool-house) plants, and it is therefore worse than useless to attempt to force them into rapid growth by means of extra heat, as this will only result in a fine crop of insects of various kinds and in ultimate failure. It is therefore recommended that they be grown in a night temperature of forty-five degrees, and be given abundant ventilation whenever the weather will permit, and as the roots do not like to be confined too closely, the most successful method of growing Lapagerias is to plant them out in a bed prepared for the purpose in the end of the house, the end least exposed to direct sunlight being the best adapted to them. In the preparation of the bed much care should be given to the drainage, this being a very essential point, for while these plants enjoy copious waterings during the growing season, yet proper provision should be made to allow all surplus water to escape. The soil most suitable is largely composed of rough fibrous peat, to which may be added not more than one-fourth the quantity of coarse loam, and a moderate quantity of sand. Some broken charcoal may be added to the mixture, and tends to keep it fresh and sweet. The plant or plants may then be planted out and trained up wires to and along the roof of the house, a very pretty effect being gained by planting the white and rose-colored varieties in the same bed, and allowing their shoots to mingle on the roof of the house, each variety thus used heightening the effect of the other.

The propagation of Lapagerias is chiefly effected by layering and from seeds, the first being preferable where the increase of a particular form is desired, as seedlings are liable to vary. But either method requires some time for its completion, as the seedlings usually take from three to four years (and sometimes more) before they flower. Much stronger plants are secured in the same period of time by layering, and therefore this is naturally the more popular plan. Cuttings may be rooted occasionally, but this is always a long process, and frequently a doubtful one, and as such is not to be recommended.

The Lapagerias are not specially subject to the attacks of insects if they are grown in a proper temperature and thoroughly syringed every bright day (except when in flower), the most common pests to attack them being thrips and green fly, but, fortunately, both of these may be eradicated by fumigating, or by syringing with tobacco-water. Slugs are also extremely partial to the succulent young shoots as they appear above the ground, and must be trapped or otherwise guarded against.

It should also be remembered that during the summer the Lapagerias will thrive under moderately heavy shading—full exposure to our July sun being quite injurious to them.

PHILESIA BUXIFOLIA.—This is also a hard-wooded plant from South America, and is quite closely allied to the Lapagerias, so closely, in fact, that a hybrid plant has been raised between these two genera, to which has also been applied the hybrid name, Philageria. *Philesia buxifolia* is an erect growing evergreen shrub with small leaves, the character of the latter being well denoted by the specific name. It has bright rose colored waxy flowers of moderately large size, bearing some general resemblance to those of the Lapagerias, but having only three petals instead of the six found in the Lapageria.

This Philesia is, I think, the only species of the genus, and is a pretty little compact growing cool-house plant that will flourish under very similar conditions to those noted for the Lapagerias. It may be increased by cuttings, though these root rather slowly.

Holmesburg, Pa. *W. H. Taplin.*

Notes on Some Hardy Wild Roses.—IV.

IN 1887 Professor Crépin described,* under the name of *Rosa Wichuraiana*, an interesting Rose from Japan and China, which gives promise of becoming a very valuable addition to our list of desirable hardy species. Siebold and Zuccarini appear to have previously referred it to *Rosa sempervirens*, a very different species, which is a native of southern Europe and northern Africa. Later it was included by Franchet and Rochebrune with their *Rosa Luciæ*, also indigenous to Japan and China. Although it does not appear that this Rose has ever been put on the market under the name so recently given to it by Professor Crépin, yet as *Rosa bracteata* it is found in the catalogues of some German nurseries, and plants have been received so labeled at the Arboretum.

But in this again we have a very misleading name, because the true *Rosa bracteata* is a very different plant, a native of the more southern portions of China, and so far not known to be hardy here, although it has become naturalized in the far southern states. The name has also been applied to a climbing hybrid with double flowers.

R. Wichuraiana is a low trailing species, and it differs from any other Rose of similar habit in this latitude by the unusually prostrate character of its stems. Other species of trailing or climbing Roses usually grow upward for a foot or two at least before they bend over and trail on the ground, but *R. Wichuraiana* rests on the earth almost as closely as an Ivy, and it has a habit of throwing out little rootlets at various points along its creeping stems if the soil is sufficiently moist. It makes a rampant growth, and will produce stems ten or fifteen feet or more in length in a season. The leaves are composed of one, three, five, seven or nine thick, smooth, shining, stiff, small green leaflets. These are serrate, and generally short, obovate, or almost round and blunt at the apex. Generally more or less scattered along the stems are short, stout, recurved spines, which are easily removed from the young shoots. On the flowering branches the spines are small, few or absent. There are no prickles. The flowers are borne in much profusion in short, broad, somewhat pyramidal clusters on the ends of short branches and branchlets. They expand from one and a half to fully two inches across, and the petals are of a pure white color, the stamens being yellow. They possess a strong fragrance, resembling that of the Banksian Rose more than any other familiar species. The period of general flowering here appears to be from about the end of the first week in July until the end of the month. A few blossoms, however, are occasionally produced throughout the rest of the season. The ovate, deep dull red fruit does not mature until quite late in the autumn, but the seeds are generally ripened without injury from severe frosts.

Rosa Wichuraiana is quite hardy here, and probably its low trailing habit is of advantage to it in withstanding our winters. The terminal portions of the long new shoots frequently do not ripen sufficiently to withstand the cold, and they are consequently destroyed; but, in any case, enough of the stems remain to blossom freely the following summer. On account of its handsome evergreen looking foliage, its beautiful white

* *Bulletin de la Société royale de botanique de Belgique*, tome xxv., 2, pp. 189-192.

flowers, which appear after most other single Roses have done blooming, and for its peculiar habit of growth, this species is likely to prove valuable for planting on rockeries, covering slopes or embankments and the ground among open shrubbery. A little further south it will probably prove to be quite distinctly evergreen, as under some circumstances it retains its leaves throughout the winter here. The plant is one of those which may be propagated by cuttings with the greatest ease.

Through some mistake of German nurserymen this species was sent (under the name of *R. bracteata*) to the Park Department of Boston instead of another kind of Rose which was ordered. In this case, however, the mistake proved not entirely at the expense of the purchaser, for the plants are considered to be quite an acquisition. The experienced superintendent of the planting of parks says of it: "I have planted it on very exposed situations in the Franklin Park; for instance, on the top of the Overlook; and also on the slopes of the Back Bay. It stood the last winter exceedingly well; only some of the softest, latest shoots suffered a little on the tops. The six original plants in the nursery made shoots from ten to fifteen feet long the first season. I covered part of them with leaves the first winter, but there was no difference noticed in the condition of the covered and the uncovered plants in the following spring. This is the third winter I have had them." *R. Wichuraiana* is reported as found in nearly all parts of Japan, where it is said to grow on sandy or gravelly soils, often being met with on the sands near the sea-shore, and having stems which attain a length of thirty or forty feet.

The closely allied *R. Luciæ* has not yet been grown here.

In the European Field Rose (*R. arvensis*) we have the nearest approach to *R. Wichuraiana*, in habit of growth, among the hardy white-flowered species. But the Field Rose is not always fully hardy here, its hardiness apparently varying according to the climate of the region from which it was sent. Plants of it, received under the name of *R. repens*, from one of the gardens of central Germany, have proved nearly as hardy as could be wished. It is a desirable plant for rockeries, banks, and for training on walls and similar situations. As is well known, it is a form of this which is cultivated as the Ayrshire Rose.

Although possessing an interest and charm of blossom peculiar to itself, the Field Rose has a formidable competitor for popular favor in the true *R. multiflora* from Japan, which was so recently described and figured in GARDEN AND FOREST (vol. iii., pp. 404–405). This may be trained to a post or pillar, where it will attain a height of fifteen or twenty feet, making a beautiful show when its panicles of small white flowers are in their fullest bloom. It has been used in hybridizing with other species, and some interesting and valuable variations have resulted from these mixtures.

To the professional Rose-grower, however, *R. multiflora* (or *R. polyantha*, as many insist upon calling it) promises to be a great acquisition as a stock upon which to bud our choice cultivated Hybrid and Tea Roses. At the Arboretum it has been found quite equal or superior to the Dog Rose as a stock, and it has been extensively tried by some French propagators, apparently with much success. Among the advantages claimed for it is the fact that stocks are more easily propagated either by cuttings or seeds, the latter germinating within a few weeks from the time of sowing. The roots are not as inclined to be tap-rooted as the Dog Rose, and they are finer and more fibrous, which especially adapts it for forcing in small pots. Plants budded on *R. multiflora* are more easily forced and come into bloom sooner, the earliness not being at the expense of quality. The record of an experiment, on a large scale, with stocks of *R. multiflora* and the Dog Rose (*R. canina*), given exactly the same treatment and budded with one variety of Rose (Etoile de Lyon), showed that the average was twice as many blooms on the *R. multiflora* stocks, and the flowers were fifteen days earlier.

The only known hardy climbing Rose of our own country, the Michigan or Prairie Rose (*R. setigera*), is not surpassed by any other in showy character of blossom. It has also an added value in the fact that it blooms so late, the flowers being contemporary with those of *R. Wichuraiana*, or at a time when the flowers of nearly all other species have faded. It is unfortunate that, although so handsome, the flowers of the Prairie Rose are not fragrant, a fact which is against its value and popularity. Hybrids have been produced with this Rose, but none of them appear to have much perfume. It seems singular that no fruit ever appears to be formed or matured on the Prairie Rose in cultivation in this part of the country.

Arnold Arboretum. *J. G. Jack.*

Protecting Evergreen Plants.—We have been very fortunate so far this winter with our evergreens, and hardly any plants have suffered from the cold. True, it has not been severely cold; but our evergreen Magnolia plants and Gordonias look quite fresh; much more so than they will later on if they are not covered. From this time to the end of March is the trying period for broad-leaved and some other evergreens. In fact, now is the time to shield them from sunshine and fierce winds. Let a few cold days come now, with snow on the ground and a bright sun shining, and very quickly Yews, Cunninghamias, Euonymuses will show signs of distress. It is not protection against cold, but against wind and sun, that must be given. Provide straw, sheeting, mats—anything of this kind for large plants, and headless barrels for smaller ones. Branches of Pine or Arbor-Vitæ will prove a help. And now is the time to guard small herbaceous plants from being thrown out by frost and destroyed in spring. The slightest covering of leaves will prevent this. The protective value of a mulch for this purpose can hardly be overestimated.

Germantown, Pa. *Joseph Meehan.*

Iris Bakeriana.—It is about two years since Max Leichtlin, of Baden Baden, enriched the Harvard Botanic Garden with this little gem. Herr Leichtlin introduced the plant from Kurdistan some three years ago. The specimen at this place flowered last spring, and is now again in bloom. It belongs to the spring-flowering, bulbous-rooted section of Irises, of which *I. reticulata* is a familiar example. The cylindrical, or semi-cylindrical leaves (some of them are flattened on one side), barely exceeding six inches in height, are of a pale green color and minutely ribbed. The spathed flower-stalks proceed from clusters of these leaves, each one bearing a single flower of the characteristic Iris form and about two and a half inches across. The fall segments are white, spotted and tipped with rich purple, and feather-veined at the base with lilac; the interior segments of a beautiful soft lilac.

In England this plant grows and blooms satisfactorily in the open air, but its hardiness has not as yet been tested here. The only specimen in the garden is considered too valuable at present for the risks of experiment, and, therefore, it has been grown in a pot under the protection of a frame heated to exclude frost. It is a charming subject for pot culture. The roots should be potted in fall and allowed complete rest during the summer months. I have not been able to detect the Violet-like odor attributed to the flowers. The amount of forcing, however, to which the plant is necessarily subjected under pot cultivation, though in this case reduced to a minimum, may perhaps suppress the fragrance.

Cambridge, Mass. *M. Barker.*

Correspondence.

Orchids at North Easton.

To the Editor of GARDEN AND FOREST:

Sir.—There is now a magnificent display of bloom in the Orchid houses of Mr. F. L. Ames, at North Easton, Massachusetts. Cattleyas and Cypripediums contribute most extensively to this, but many other genera are represented by a bewildering array of species and varieties. An enthusiast would perhaps consider the new Cypripediums, *C. Niobe* × and *C. Calypso* ×, the most interesting plants of the entire collection. They are very beautiful, and the former has often been alluded to in your columns. *C. Calypso* is a hybrid of *C. villosum Boxalli* and *C. Spicerianum*, the latter being the male parent. Some idea of the amount of bloom which this princely collection affords may be obtained from the statement that about 500 racemes are now showing on the Odontoglossums, besides a considerable number already fully developed. There are a considerable number of seedling Cypripediums, Dendrobiums and Masdevallias, from which the gardener, Mr. William Robinson, expects some good things.

One of the best of the small collections of Orchids in the vicinity of Boston is that of Mr. E. W. Gilmore, at North Easton. The greenhouses are situated but a few minutes' walk from those of Mr. Ames, and visitors to one of the places should not miss the opportunity of inspecting the other. Cattleyas, Cypripediums, Odontoglossums and Phalænopses form the largest part of Mr. Gilmore's collection, and his gardener, Mr. Thomas Greaves, evinces a degree of skill in their culture which is rarely excelled. "We attempt only a little here," said Mr. Greaves, "but that little is done as well as we know how to do it." A good example of the utility of this motto is found here in a lot of *Cattleya citrina*, which, after being six years in cultivation, is probably the finest in existence. There are

peculiar difficulties in keeping this pretty species in healthy condition for more than three years after its importation, as every grower of experience knows. The manner in which Mr. Greaves treats his plants is somewhat exceptional. The plants are fastened to little rafts, and arranged so as to leave a vacant space of about one-fourth of an inch between the pieces. This arrangement is decidedly superior to the block or pot system usually practised, for, as Mr. Greaves points out, it reduces to the smallest margin the possibility of water being retained about the plants. In a half-span house with aspect due north these rafts are hung against the back wall as near as possible to the glass. This brick wall is of ordinary thickness, and close behind it, on a level with the plants, there is a series of hot-water pipes, which convey the heat to other parts of the structure, and are, therefore, always warm in cold weather. When the weather is not extremely severe air is given day and night throughout the year, and in winter the requisite tempera- is uniformly maintained by means of artificial heat. Mr. Greaves believes there is a virtue in keeping the foliage dry during winter, and he considers the lodgment of water about the base of the leaves positively injurious at that season. Hence the plants are then watered by being dipped so as to avoid wetting the foliage. In the warm season, however, roots, pseudo-bulbs and leaves are all freely syringed. Under these conditions the masses of extraordinary large pseudo-bulbs develop a most healthful appearance, and almost every growth now gives promise of flowers in abundance.

Cambridge, Mass. *M. Barker.*

The Proposed Monument to General Grant.

To the Editor of Garden and Forest:

Sir.—I agree with your correspondent, Mrs. Van Rensselaer, that credit is due to Mr. Duncan for including the treatment of the ground in his general design. It will be held, however, by some critics that the monument should be adapted to the park instead of seriously modifying the park to suit the monument. Whether the park shall be cut in two and partially obliterated, while the views up and down the river are obstructed by a stone structure for the sake of a flight of steps which few persons will ever feel disposed to climb, is another question. As a matter of practical moment, I should like to be informed whether the Monument Committee has authority to make such changes in the plans of the park as may seem to them desirable.

New York. *A. W. C.*

[Of course, the Park Board is the final authority in such matters. In the regular course of proceeding for such cases provided, permission is asked for the erection of a given structure, and its plans are offered for inspection. These are referred to the Landscape Architect of the Board, as are all matters affecting the design of the parks. Upon the report of this officer the Board will take action. We believe that a design for this portion of Riverside Park has already been adopted by the Board, which contemplates the erection of a mounument and fixes its location.—Ed.]

The Gardens of Wellesley College.

To the Editor of Garden and Forest:

Sir.—There is always something of interest in the greenhouses here, and for the small area of glass very much is accomplished. Mr. Butler, who came here as gardener to Mr. Durant many years before the college was founded, which commemorates his public spirit, has been gardener to the college ever since it was established. No one without experience would imagine how ceaseless are the requirements of such an institution for plants which are of botanical interest only. Mr. Butler is about to begin the germination of seeds, to show the development of the embryos, which are required, in some cases, in two stages, and for two sets of classes meeting on dates furnished him beforehand. It can be easily seen that to have the embryos in the proper stage at certain dates requires very nice calculation. Mr. Butler has therefore prepared a list or diagram, which is a work of art, giving days or hours, as the case may be, which are required to bring the germinating seeds to the proper state of advancement.

Apart from his botanical work, Mr. Butler finds time and space to grow a few plants well, some to be used for decorating the college halls on special occasions, and some for Mrs. Durant's private conservatory. During the summer one will always find some good Fuchsias, Coleus, Caladiums, Gloxinias, Begonias, Achimenes, and a few choice Orchids in bloom. In fall and winter we find Chrysanthemums, small plants, but extremely well grown, Cyclamens, Cinerarias, Primulas, Camellias and Azaleas, which two latter classes of plants have always been his pride.

Ophiopogon Jaburan, var. *variegatum*, is a comparatively rare and interesting Japanese plant, which I saw here on a recent visit. It has stiff, Iris-like leaves and of slow growth, and is nearly hardy. I have known it many years, but never before had the pleasure of seeing its beautiful indigo-blue, drupe-like seed-vessels. The variegation is in stripes, and is really pretty when the new growth is made, but disappears considerably as the leaves age. For botanical purposes it is useful in representing the *Hæmodoraceæ*.

Among Orchids in bloom now are *Cypripedium* (*Selenipedium*) *Stonei*, very finely colored; *Angræcum Lowi*, a very neat little species with pure white flowers, and *Angræcum eburneum*, sent here for *A. superbum*, which Mr. Butler does not believe it is. I had not observed, until my attention was drawn to it, the peculiar double twisting of the fruiting pedicels, which brings the normally superior, but ordinarily inferior, segment of the perianth back to its normal position, giving the flowers a different aspect altogether from Angræcums generally. All the segments of the perianth, including the spur, are green, with the exception of the (in this case) superior one, which is the purest white. It is a very striking species and a robust grower.

Wellesley, Mass. *H. G.*

Lilium Hansoni.

To the Editor of Garden and Forest:

Sir.—Your usually correct correspondent, E. O. Orpet, is slightly in error, I think, in regard to the first flowering of *Lilium Hansoni*. This Lily was first sent from Japan to Max Leichtlin, Germany, with quite a considerable collection, and flowered with him for the first time outside of its native country. Herr Leichtlin sent some bulbs to the late P. Hanson, an enthusiastic amateur of Brooklyn, and named it Hansoni as a compliment to the friend who had sent him all our American species. At least this is the statement, if my memory serves, which Mr. Hanson made to me.

Floral Park, N. Y. *C. L. Allen.*

Recent Publications.

Three Years in Western China.—A Narrative of Three Journeys in Ssu-ch'uan, Kuei-chow and Yun-nan, by Alexander Hosie. Dodd, Mead & Company, New York.

Mr. Hosie undertook the journeys described in this volume as a member of the British Consular Service, and it is the expansion of reports published in the interests of trade. But incidentally it contains a good deal of information which interests students of botany and horticulture, as well as many graphic descriptions of little known tracts of country. The large map upon which his wanderings are marked shows a course where many a botanist would delight to tread in his footsteps; and though his experiences included almost as many hardships in-doors as out, these were naturally less severe than enthusiasts in the cause of science must meet in totally uncivilized countries. The desire of the British Government to open up these provinces to foreigners, was the inspiration of Mr. Hosie's mission; and undoubtedly the cause of science as well as commerce will soon profit by his efforts, while in the mean time his book will show where the botanist is likely to reap rich harvests and how these places may eventually best be reached.

In the valley of the Yang-tsze near Ch'ung-k'ing, he says, "I first made acquaintance with the Poppy in full bloom. Fields of white and purple equaled in number the patches of wheat, barley and rape. Where the flowers had fallen the peasants, principally women and children, were busy harvesting the juice. The tools used in the operation are simple but effective. Towards evening the peasants may be seen moving in the Poppy-fields, each armed with a short wooden handle, from one of the ends of which protrude three and sometimes four points of brass or copper blades, firmly inserted in the wood. Seizing a capsule with the left hand, the operator, with his right hand, inserts the points of the blades near the top of the capsule, and draws them downward to the stem of the plant. From the incisions thus made a creamy juice exudes which gradually becomes of a dark brown color. This is scraped off in the early morning by means of a short curved knife, and deposited in an earthenware bowl, the contents of which are afterward fired or left in the sun to dry. In this way the weight is reduced about one-half, and the opium is

then ready for boiling. The whole process is simple, and may be accomplished by the women and children of the family, thereby permitting the more able-bodied to attend to the other farm duties, thus reducing the price of labor and consequently the cost of the drug. The bleeding of the capsule is continued until the flow of juice is exhausted." At other points Mr. Hosie found still wider fields of Poppy, and describes whole valleys and hillsides as "one mass of Poppies in full bloom—white, mauve and white tipped with pink being the chief colors."

The way in which, in the highly cultivated districts, every acre of ground is utilized is well explained where Mr. Hosie writes of the same valley where he first saw the Poppy: "The remainder of the valley was occupied by Rice-fields, submerged in preparation for the summer sowing. Sometimes they are allowed to soak for months, their surfaces being frequently covered with floating water-plants, which are afterward utilized as manure. They are likewise stocked with fish. In the early spring reeds and rank grass are cut from the hillsides and made up into small bundles, which are then strung on bamboos, laid down in shallow water in the Yang-tsze and weighted with stones. Here the fish spawn, and the ova adhere to the grass and reeds, which are then taken up and sold. The grass is afterward scattered in the higher fields, between which and the lower water-communication is kept up by digging small outlets, which can easily be filled up at a moment's notice. Here the ova are hatched and good fishing may be had after a few months."

Here Mr. Hosie found the Wood-oil-tree (*Aleurites cordata*), "scattered among the fields, seeming to prefer thin-soiled, rocky ground. It grows to a height of about fifteen feet, and has large, beautiful shady green leaves, which were lighted up as we passed with bunches of small pink-white flowers. It produces a large green fruit like an apple, the large pips or seeds of which contain the oil for which the tree is famous." This oil is used for lighting and in various manufactures, but "the seeds, if eaten, cause nausea and vomiting."

In the province of Ssu-ch'uan sericulture is an important industry, and "every homestead where Mulberry leaves are procurable is engaged in it," the work again being carried on by women and children, and markets for cocoons and opium being held in each little village at intervals of five days. Not only the Mulberry, but the Oak, and, likewise, *Cudrania triloba*, furnish leaves for the worms, and the last is believed to be "particularly suited to the infant palate, the silk produced from such a diet being thought superior in quantity and quality." The hemp of this region is furnished by *Abutilon Avicennæ*, and very heavy crops of wheat are produced by planting at intervals of from nine to twelve inches instead of sowing broadcast.

In Kuei-chow and Yun-nan the writer describes the population as scant and lazy, partly because of the mountainous character of the land and the consequent difficulty of transportation. But wars and insurrections in former days have also played their part, and we read of ruined cities, built of substantial stone, where the inhabitants now live in wattled huts, using the floors of the superfluous houses for vegetable gardens.

When approaching the Yun-nan frontier the author met two new crops, Buckwheat and Oats. "I saw, too, a new method of manuring the fields. For some days I had been puzzled to account for the peculiar growth of certain trees whose branches were very short, and for which I could obtain no satisfactory explanation; but all at once I came upon a peasant hacking off the branches and another plowing them into the Rice-fields." When he reached the city of Ning-yuan, in the plain of Chien-ch'ang, he found that but two foreigners had preceded him. This plain is immensely rich, and, in addition to Mulberry-trees, produces "Rice, Poppy, Cotton Safflower, a variety of fruits, medicine and dyes, Cassia, Beans, Wheat and Maize. . . . Pine boards are also a special export from this region. Immense trees are found embedded in the soil on the hills, their positions being discovered from lines of Pine-sprouts. They are dug up, sawn and sent north in large quantities." Here also is the centre of the famous but hitherto little understood "white-wax industry."

Mr. Hosie's third journey was undertaken with the special view of providing the authorities at Kew with information upon this subject. From its results the so-called "Insect-tree" of the Chinese has been identified as *Ligustrum lucidum*, or Large-leaved Privet. The bark of the branches and twigs of this tree are covered with scales containing infant insects—the White-wax insects. In the end of April these scales are collected and carried by porters across the mountains to Chia-ting, made up into paper packets, which must be transported with the greatest care and speed. West of Chia-ting stretches a great plain of Rice-fields, and here "almost every plot of ground . . . as well as the bases of the mountains are thickly edged with stumps, varying from three or four to a dozen feet in height, with numerous sprouts rising from their gnarled heads. These stumps resemble at a distance our own pollard Willows. The leaves spring in pairs from the branches; they are light green, ovate, pointed, serrate and deciduous. In June, 1884, when I visited this part of the country, some of the trees were bearing bunches apparently of fruit in small pods; but as no flowering specimens were then procurable there still exists a little uncertainty as to this tree. I am informed, however, that it is, in all probability, the *Fraxinus Chinensis*, a species of Ash. This tree is known to the Chinese as the *Pai-la-shu*, or 'White-wax tree.'" When they reach the valley the wax-insect scales "are made up into small packets of from twenty to thirty scales, which are enclosed in a leaf of the Wood-oil-tree. The edges of the leaf are tied together with a Rice-straw, by which the packet is also suspended close under the branches of the Wax-trees. A few rough holes are drilled in the leaf with a blunt needle, so that the insects may find their way through them to the branches. On emerging from the scales the insects creep rapidly up the branches to the leaves, among which they nestle for a period of thirteen days. They then descend to the branches and twigs, on which they take up their positions, the females, doubtless, to provide for a continuation of the race by developing scales in which to deposit their eggs, and the males to excrete the substance known as white wax. Whether or not the wax is intended as a protection to the scales I am not prepared to say. . . . The wax first appears as a white coating on the under sides of boughs and twigs, . . . gradually spreads over the whole branch, and attains, after three months, a thickness of about a quarter of an inch." When the depositing is finished the branches are lopped off, as much of the wax as possible is removed by hand, melted in boiling water and skimmed off, when it is ready for sale. Then the twigs and branches are thrown in the pot to secure the remaining wax, and even the insects themselves are squeezed in a bag. It is this method of boiling, of course, which necessitates each year the importation of a fresh supply of scales with eggs or insects. Each wax-tree receives its burden of scales only at intervals of three years. The wax is used in a variety of important ways, and, mixed with tallow, gives much greater consistency to candles, or, used as a coating, prevents their guttering.

We have but culled a few of the most interesting passages from Mr. Hosie's book without attempting to follow him systematically through his wanderings or to describe coherently the character of the many and very diverse districts he visited. To do this thoroughly would have been almost to quote his book entire, so we may conclude by referring our readers to it as a valuable addition to the literature of travel, and a straightforward, interesting account of some of those few regions of the world which, while rich in interest, are still almost unknown to us.

Notes.

The *Revue Horticole* states that Vilmorin & Co. have produced a double hybrid Cineraria, which will soon be put upon the market.

The school children of California are to make a collection of the wild flowers of the state, which will be exhibited at the World's Fair in Chicago.

Mr. C. B. Waldron has been appointed Professor of Forestry and Horticulture in the North Dakota Agricultural College, and Mr. H. L. Bolley, Professor of Botany.

It is said that the Berlin authorities have issued a caution against the use of dried mushrooms, many cases of illness having been attributed to the presence among them of poisonous species.

M. Délaux, well known as an introducer of Chrysanthemums, announces, among the novelties of the year, a collection of early flowering varieties which were highly commended at the exhibitions last year.

According to a report published in *Popular Gardening*, the total shipments of apples from this country to England during the past season and up to date of November 17th amounted to 192,000 barrels, as against 305,000 barrels shipped up to the same time in 1888.

Tom Thumb Dahlias is the name given to a dwarf strain of these plants which have been produced by Mr. Girdlestone, Secretary of the National (England) Dahlia Society. The plants

are only from nine to twelve inches high, and will probably prove valuable additions to the list of bedding-plants.

In a paper on the cultivation of Roses, read at the last weekly meeting of the Massachusetts Horticultural Society, Mr. John N. May, of Summit, New Jersey, said: "Twenty years ago possibly five thousand Roses a day was the limit of supply for New York City; now as many as fifty thousand a day can often be found there, and in the spring of the year the number may reach a hundred thousand a day."

It is reported in the *Popular Science Monthly* that Professor Geddes, of Edinburgh, in consequence of recent investigations, has been led to reject "the commonly accepted views of the origin of thorns. He has found that there is a more or less developed general contrast in vegetative habit between thornless and thorny varieties. The thorny varieties or species show a more diminishing vegetativeness than their thornless congeners; in fact, they frequently develop their thorns by the actual death of their germ points."

In an account of Japanese Pear-orchards, recently published in the *American Garden*, Professor C. C. Georgeson said: "The heaviest item of expense is for the destruction of insects. Using no poisons, and having no spraying-pumps, the work is done by hand. A moth lays its eggs in the flower at the base of the pistil, and the larva is removed as soon as it hatches, before it has buried itself in the young fruit. This is delicate work, and, as I was told, could not be trusted to women and children, who could be had cheaper than men; but the work richly repays the outlay."

French journals state that the great Grape country of Champagne, which as yet has been free from the phylloxera, is now threatened by the dreaded pest. In the commune of Tréloup in the Department of Aisne, and close to the borders of the Department of the Marne, several colonies of the phylloxera have recently been discovered, and although, of course, the most energetic measures of isolation and extermination were at once begun, there is great alarm lest the Marne districts—the great champagne-producing lands—may be infected, as a brisk trade has been carried on by them in the importation of Vines from the now infected village of Tréloup.

In his recently published article on southern California, Mr. Charles Dudley Warner says that the new City of Riverside occupies an area some five miles by three, and that "one avenue through which we drove is 125 feet wide and 12 miles long, planted in three rows with Palms, Magnolias, the *Grevillea robusta*, the Pepper and the Eucalyptus, and lined all the way by splendid Orange-groves, in the midst of which are houses and grounds with semi-tropical attractions. Nothing could be lovelier than such a scene of fruits and flowers, with the background of purple hills and snowy peaks." Yet in 1872 there was only a "poor sheep ranch" where this city of some 6,000 inhabitants now stands.

A "Flower-girls' Guild" was established not long ago in London by certain charitable ladies with a view to improving and cheering the lives of the many girls who sell flowers in the streets at all times of the year. The first step was to provide the often half-clothed girls with warm dresses and bonnets, which are of a special cut and color—gray, trimmed with scarlet—as the idea of a "uniform" is, in England at least, attractive to all members of the poorer classes. Water-proof cloaks for stormy weather were also provided, and in a building set apart for their use they find dressing and washing rooms, and a cool, well-ventilated place in which to store their flowers at night. In the future a sick-relief fund will be established as well as evening classes and entertainments.

At a recent meeting of the Massachusetts Horticultural Society the Harvard Botanical Garden sent a flowering specimen of *Hippeastrum aulicum*. This species was introduced to cultivation from Brazil in 1810, and is interesting chiefly as being one of the plants employed to produce by hybridizing and crossing the splendid varieties of this genus now in cultivation. The flowers of *H. aulicum* are red, green and purplish, between six and seven inches across, with the edges of the segments more or less incurved. When compared with those of some recent varieties they show clearly the improvement which has been made in these plants. The flowers of the variety John Ruskin, for instance, measure from eight to nine inches in width, with broad, flat, imbricate segments. The shades of color have been increased in recent forms to a wonderful extent, and in most cases these shades lack that coarseness which is found in many of the original types.

Over 1,000 persons met in the hall of the Museum of Natural History on Saturday at the call of the New York State Forest Association. Morris K. Jesup, the President of the Association, was in the chair, and effective addresses were made by Honorable Warren Higley, Assistant United States Treasurer Ellis H. Roberts, A. W. Gleason and Rev. Dr. Lundy, President of the Pennsylvania Forestry Association. William Potts, Chairman of the Executive Committee of the Association, offered resolutions to the effect that it is essential for the state to have absolute control over enough of the wilderness to preserve the sources of the streams which rise therein, and that until this control is established the Legislature should take measures to minimize the destruction of the timber in this region. To this end it was urged that laws be enacted to prohibit the building of railroads over state lands and the building of dams which should cause the overflow of these lands, and for increasing the efficiency of the state control in preventing forest-fires, in punishing trespassers, in rewooding denuded lands and introducing practical forest-administration. The resolutions were seconded by Ex-President Cleveland, who counseled moderation in asking for appropriations, and suggested the expediency of gaining the co-operation of clubs and other property-owners in the Adirondacks. The meeting was altogether the largest and most enthusiastic one ever held in this state in the interest of forest-preservation.

"Never throw away a morsel of an Orchid-plant capable of growing until it has flowered, even if you are obliged to wait for years for this event." Such is the advice which Monsieur G. Miteau gives in a recent issue of *Le Journal des Orchidées*, basing it on his own experience, which he tells as follows: "Four years ago, when I began to cultivate Orchids, one of my friends gave me a lot of small bits of a large number of species. Among them were some so miserably small and unpromising that my friends advised me to throw them away, declaring that I should be forced to wait ten years without seeing a flower, even if they ever flowered at all. Among these scraps of plants was a little bit of *Lælia purpurata*, whose life appeared to hang by a thread. I do not know why I did not follow my friends' advice and throw these miserable specimens away. I did not do it, however, and the first year my *Lælia purpurata*, which had been condemned by the Faculty, produced a little shoot and a minute bulb. The second year it produced two bulbs stronger than that of the preceding year. At last, the third year (it was not to flower for ten years at least), it produced four flowers from a comparatively strong bulb, and produced a second shoot strong enough to lead me to hope for two flower-shoots the following year, and now it turns out that the variety is a remarkable, new and beautiful one. I exhibited it at one of the meetings of L'Orchidéenne, and it obtained a certificate of merit of the first class, receiving the name of *Lælia purpurata*, var. *Nolisi*. Some of the other bits flowered before the Lælia, some at the end of the year, others not until a year later. All the others are in good condition, and will doubtless flower next year."

Catalogues Received.

Bradley Fertilizer Co., 27 Kilby Street, Boston, Mass.; Oranges and Vegetables in Florida.—Alfred Bridgeman, 37 East Nineteenth Street, New York, N. Y.; Vegetable, Grass and Flower Seeds.—W. Atlee Burpee & Co., Philadelphia, Pa.; Vegetable and Flower Seeds, Thoroughbred Stock.—J. L. Campbell, West Elizabeth, Allegheny County, Pa.; Eureka Incubator and Brooder.—Clarence C. De Puy, Syracuse, N. Y.; All About Broilers and Market Poultry Generally.—R. Douglas & Sons, Waukegan Nurseries, Waukegan, Ill.; Wholesale Catalogue of Hardy, Ornamental Evergreens.—S. H. Garrett, Mansfield, Ohio; The Garrett Fence Machine; Small Fruits, Fruit Trees, Shrubs, Vines and Ornamental Trees.—Chas. A. Green, Green's Nursery Co., Rochester, N. Y.; Small Fruits and Fruit Trees.—Haage & Schmidt, Erfurt, Germany; Novelties in Bulbs.—William Baylor Hartland, 24 Patrick Street, Cork, Ireland; Flower and Vegetable Seeds.—Hitchings & Co., 233 Mercer Street, New York, N. Y.; Dwelling-Heating by Hot Water.—J. T. Lovett Co., Little Silver, N. J.; Flower Seeds, Small Fruits, Fruit and Ornamental Trees.—Hugh Low & Co., Clapton Nursery, London, E., England; New and Desirable Plants.—Orlando Nursery, Orlando, Fla.; Orange-trees and Sub-Tropical Fruits.—W. Piercy, 89 West Road, Forest Hill, London, S. E., England; Early and Late-flowering Chrysanthemums.—Rea Brothers, Norwood Nurseries, Norwood, Mass.; Trees, Ornamental Shrubs, Roses, &c.—Storrs & Harrison Co., Painesville, O.; Vegetable and Flower Seeds, Small Fruits.—James M. Thorburn & Co., 15 John Street, New York, N. Y.; Flower, Vegetable, Grass Seeds.—James Vick, Rochester, N. Y.; Flower and Vegetable Seeds.—Whitman Saddle Co., 118 Chambers Street, New York, N. Y.; American and Imported Saddles.—T. W. Wood & Sons, 8 and 10 South Fourteenth Street, Richmond, Va.; Grass, Vegetable and Flower Seeds.

Beautiful Women.

Beauty is, perhaps, the greatest power the world holds. It has in all ages controlled the actions of men, and swayed the destinies of nations. Woman with her fatal gift of beauty has always been able "to smile men down imperiously as Venus did the waves." But many women do not fully realize the power of beauty, or they would never allow the roses to be stolen from their cheeks, the light to die from their eyes, the fawn-like gracefulness to depart from their step. They would at once fly to the great and universal cure for the many weaknesses and irregularities common to women, Beecham's Pills, which (if your druggist does not keep them) will be mailed to you for 25 cents, by B. F. Allen Co., 365 and 367 Canal Street, New York.

True Happiness.

The most eminent writers in all ages have declared that the first and greatest essential to human happiness is contentment; and it is undoubtedly true that contented persons are generally happy. But how are the great masses of people to gain this boon of contentment? Is it really attainable? We say yes; by the great majority of persons, if they will keep their blood pure and their livers from growing torpid by using Beecham's Pills, which (if your druggist does not keep them) will be mailed to you for 25 cents, by B. F. Allen Co., 365 and 367 Canal Street, New York.

Story-Tellers.

Sir Richard Steele said "I have often thought that story-tellers as well as poets are born, not made." We are not positive if we can agree with the sententious Richard or not. We are unfortunate enough to have intimate acquaintanceship with a great number of story-tellers, but whether they were born or made, we are unable to say. Some have reached such perfection in the art that they can declare with the most provoking sang-froid imaginable, that there are other medicines equal to Beecham's Pills. But any one who has tested these Pills knows better. Price 25 cents a box. If your druggist does not keep them send to B. F. Allen Co., 365 and 367 Canal Street, New York, Sole Agents for the United States.

BURNETT'S

PERFECTLY PURE HIGHLY CONCENTRATED

Standard Flavoring EXTRACTS

ABSOLUTELY PURE.

FULL MEASURE.

No cartoons to hide long-necked and panelled bottles.

Thoughtful people should read the testimonials below, from cooks of national reputation.

JOSEPH BURNETT & Co., Boston:

Gentlemen,—I have used your Extracts for years, knowing them the best to be found in the market.

MARIA PARLOA,
School of Cookery, Tremont Street.

From Professor Blot.

A good dish is often spoiled or rendered unpalatable by the use of a detestably cheap, impure and deleterious Flavoring Extract.

In answer to inquiries from the ladies of my various classes, I invariably reply that during the past two years of my lectures on cookery, "I certainly prefer those prepared by Joseph Burnett & Co., of Boston, above all others."

BURNETT'S EXTRACTS are for sale by Grocers and Druggists generally throughout the United States; also in many foreign countries.

Do not accept the poor substitutes sometimes offered, but insist upon obtaining BURNETT'S, as they are THE BEST.

PLANT TREES IN WINTER

Where the climate will permit. We have in our storage houses a complete collection of Fruit and Ornamental TREES, SHRUBS, GRAPE VINES, SMALL FRUITS, ROSES, etc., and are prepared to fill and ship orders any time during the winter. Illustrated and descriptive priced Catalogue Free.

ELLWANGER & BARRY,

Mount Hope Nurseries, Rochester, N. Y.

Established over Fifty Years. *(Mention this paper.)*

"NEPONSET" WATERPROOF FLOWER POTS

For Shipping Plants.

Unbreakable. Handsome. Durable. Light. Clean. Cheap.

They insure complete protection to the roots, make a perfect pot for marketing, and effect an immense saving in cost of transportation. Cheaper to use "Neponset" Pots than to wrap with paper. Slips, Cuttings and Young Plants can be grown and marketed in the smaller sizes, saving labor of transplanting, and avoiding injury to plant.

Made in S. A. F. standard sizes.

Sole Manufacturers:

F. W. BIRD & SON, East Walpole, Mass.

Wholesale Agents:

R. & J. FARQUHAR & CO.,
So. Market St., Boston, Mass.

AUGUST RÖLKER & SON,
Station E, New York City.

Write for Samples and Circulars.

Weight of 1,000 2¼ in. pots (including crate)	..	20 lbs.
" " 2½ " " " "	..	23 "
" " 3 " " " "	..	33 "
" " 3½ " " " "	..	44 "
" " 4 " " " "	..	38 "

A GREAT INVENTION.

V. H. HALLOCK & SON wish to call the attention of the trade and general public to their exceedingly large stocks of

BULBOUS, TUBEROUS AND HARDY HERBACEOUS PLANTS,

and beg to solicit a trial order.

GLADIOLI, extra choice named sorts, in over 1,500 varieties.
" **SNOW WHITE (NEW).** The best White Gladoli for forcing. Our mixtures of the above strains are the finest in cultivation.
IRIS KŒMPFERII, Double and Single. Over 500 named varieties. The largest and finest stock in this country.
IRIS GERMANICA. A very large collection of all the finest sorts.
IRIS SIBERICA. One of the most showy of all Irises, color Royal Purple.
LILIES. Our Lily Farm is replete with over 500 varieties of all the most choice and latest importations from Japan and other countries.

We are also very large importers of **HYACINTHS, TULIPS, CROCUS, Etc.,** commonly known as Dutch Bulbs for Fall Planting and Spring display. In our Herbaceous Grounds we have a large and varied Collection of **HARDY PLANTS,** which for a whole season flowering cannot be surpassed. The best stock of **Herbaceous Phloxes** extant.

DAHLIAS. We grow over three acres, and our stock comprises nearly 1,000 varieties, the cream of this country and also of English growers. Catalogues and Special Prices on application to

V. H. HALLOCK & SON,

BULB GROWERS AND EXPORTERS,

QUEENS, N. Y.

IPOMEA PANDURATA,

HARDY DAY-BLOOMING MOON FLOWER.

Grows from bulbs. Lives out all winter. Increases in size and beauty each year. Blooms night and day. The flowers are six inches across, and very fragrant.

RED RIDING-HOOD PANSY.

Most beautiful of this popular flower. Large size, deep red color. Hazel eye, edged with shining gold.

Z. HAAGEANA fl. pl. (GOLDEN CLOTH.)

A beautiful shrubby plant two feet high. A mass of bright golden flowers from June to December.

WILSON'S SEED AND PLANT CATALOGUE AND LIVE-STOCK ANNUAL FOR 1891. 128 pages, 300 fine engravings, handsome colored plates, full of useful information. The most reliable catalogue published. All the above sent by mail for **20 CENTS** in postage stamps. A valuable collection of **BULBS AND SEEDS** Address **SAMUEL WILSON, MECHANICSVILLE, PA.**

P. & E. TRANSON,

NURSERIES,

ORLEANS, FRANCE,

Beg to inform their American friends and customers generally that their NEW LIST FOR 1890 & 1891 will soon be ready and may then be had on application to

MESSRS. KNAUTH, NACHOD & KUHNE,

5 & 7 S. WILLIAM STREET, NEW YORK.

The Catalogue contains Wholesale Prices of all the **Fruit Tree Stocks;** an extensive list of **Fruit Trees, New and Hardy Ornamental Plants, Climbers, the Hardiest and Best Conifers and Roses on their own Roots.** Also, **Small Conifers, Deciduous and Evergreen Ornamental Trees, 1 and 2 Years' Seedlings,** most useful for Nurserymen. ☞ The greatest attention given to packing.

BOTANY

The A B C of Botany. In taking up this fascinating study, *Teachers* cannot do better than consult the **A. B. C.** (*American Book Company's*) Catalogue, which contains ALL THE BEST now published. Such well-known educators and **Botany Texts** scientists as **Bentley, Coulter, Gray, Goodale, Herrick, Hooker, Steele, Wood,** and **Youmans** have contributed to the books of this popular and attractive list, which will be sent free, postpaid, to any address on application to the

American Book Company,

NEW YORK .·. CINCINNATI .·. CHICAGO.

☞ Please mention Garden and Forest.

JOHNSON & STOKES

GARDEN AND FARM MANUAL FOR 1891 mailed FREE to all who write for it.

CHOICE NOVELTIES BULBS FOR SUMMER FLOWERS. Newest Garden Tools & Poultry Supplies.

Vegetable and Flower **SEEDS**

JOHNSON & STOKES, 217 & 219 Market Street, PHILADELPHIA, PA.

REID'S SMALL FRUITS, TREES, VINES, SEEDS, ORNAMENTALS,

CRATES and BASKETS. Everything for the fruit grower. Prices Low. Estimates Free. You save one half by seeing our list. *NEW FRUITS a specialty.*

Illustrated Catalogue *FREE.* **E. W. REID, Bridgeport, Ohio.**

HARDY RHODODENDRONS

—AND—

AZALEAS,

The largest and best stock in the world. Nearly all the kinds which have proved hardy in the vicinity of Boston originated in this Nursery, and we have a supply of many hundred thousands of sturdy healthy plants, *and true to name.*

Hardy Azaleas, many thousands of the handsomest varieties.

Picea pungens glauca, the bluest type, hundreds of splendid seedling plants, 1½ to 4 feet.

Picea concolor, 2, 3, 4 and 5 feet.

Catalogues, priced and descriptive, from

ANTHONY WATERER,

Knap Hill Nursery

WOKING, ENGLAND.

The Rhododendrons exhibited at the Centennial a Philadelphia were from Anthony Waterer, as are also the Rhododendrons and Azaleas in Rotten Row, Hyde Park, London.

THE BEST KIND OF

PROTECTION

To Farm and Garden Interests
Is secured by planting only
The **Best Seeds** the World Produces.
There are none better than **BURPEE'S.**
As Thousands upon Thousands Testify
After impartial, careful Reading of

Burpee's Farm Annual FOR 1891

Will probably persuade you to try
This Practical Protection of your Garden
Shall we mail you a copy?

W. ATLEE BURPEE & CO.
PHILADELPHIA, PA.

PRESSEY'S BROODER

The Cheapest and the Best.

Hammonton Incubators, two sizes, $27 and $16 each. Langshan fowls and eggs for sale. Circulars free.

G. W. PRESSEY, Hammonton, N. J.

Splendid Novelty Hot-Air Furnaces.

EXPOSE AN IMMENSE HEATING SURFACE.
Extracts all the heat from the gases.
Furnishes Pure Warm Air in Abundance.
Universally Satisfactory.
Send for Descriptive Book.

Abram Cox Stove Co.,
Philadelphia, New York, Chicago.
Agents for New England,
Boston Furnace Co.,
79 and 81 Blackstone Street, BOSTON.

JOSEPH GILLOTT'S STEEL PENS.

GOLD MEDAL, PARIS EXPOSITION, 1889.

THE MOST PERFECT OF PENS.

PAINT YOUR ROOFS WITH
DIXON'S SILICA GRAPHITE PAINT

Water will run from it pure and clean. It covers double the surface of any other paint, and will *last four or five times longer.* Equally useful for any iron work. Send for circulars. Jos. Dixon Crucible Co., Jersey City, N. J.

GREENHOUSES, PALM-HOUSES, CONSERVATORIES.

IRON CONSTRUCTION,

PATENT IMPERISHABLE PUTTYLESS GLAZING.

Under this construction, Greenhouses are free from the constant annoyance of broken glass, frequent painting, and rapid decay. Over 40,000 square feet of glass under construction at present time. Send stamp for postage of Catalogues Circulars, &c., to

JOSEPHUS PLENTY,

Horticultural and Skylight Works.

Office, 69-73 Broadway, New York.

Arnold, Constable & Co.

INDIA PONGEES, CORAHS.

Spring Designs and Novel Effects in Colorings.

THE FINEST FABRICS MADE OF SILK FOR DURABILITY AND WEAR.

Broadway & 19th st.
New York.

Greenhouse--Heating

AND

VENTILATING.

Base-Burning Water Heaters for Small Conservatories.

Corrugated Fire Box Boilers for large Greenhouses

HITCHINGS & CO.,
No. 233 Mercer Street, New York.
Send Three Cents postage for Illustrated Catalogue.

AMERICAN WOODS.

A book on woods, containing *actual and authentic specimens* beautifully prepared so as to show transverse, radial and tangential views of the grain (See fig. *a*, *b* and *c*), and with full text. Very valuable for school or home.

PREPARATIONS OF WOODS FOR STEREOPTICON AND MICROSCOPE, and WOODEN CROSS-SECTION CARDS, very nice for fancy and business purposes. Send for circulars.

R. B. HOUGH,
Lowville, N. Y.

CORRESPONDENCE SOLICITED.

A SUPERIOR RAPID PROCESS OF PHOTO-ENGRAVING FOR ALL ARTISTIC AND MERCANTILE PURPOSES.